

The skull separates the animal individually from *P. wombat* by the characters previously defined; but these, the later examination proves, are occasionally inconstant, so that the more unstable ground of size has to be called into aid.

Hence *P. platyrhinus* does not present such permanent broadly marked osteological characters as would afford the paleontologist arguments for holding it up as a specific type. But when the external characters are brought to bear upon the question along with the osteological variations, most naturalists, as species are at present defined, would admit its separation.

Analogous instances occur in the *Felidæ*. Many other examples might be given where, although it is difficult rigidly to define differential characters from the skeleton alone, yet zoologists freely admit specific distinction.

*P. latifrons* is clearly specifically different, and may be generically so, although I have only given it the rank of a subgenus.

This last animal possesses many peculiarities, and fills up a gap between the Wombats and other genera of the Marsupials.

In the excellent volume on the Marsupialia by Waterhouse\*, that author is "inclined to regard the genus *Phascolomys* as presenting an aberrant form only of the *Phalangistidæ*." The present observations concerning the skeleton of the genus *Phascolomys* lend weight to his opinion; for in a number of points *P. latifrons* bears affinities to the *Phascolarctus cinereus*, and in *P. platyrhinus* we even find a peculiarity in the number of sternal bones belonging to the genus *Petaurus*.

If we admit a general diminution in the size of recent Mammalia, compared with many of the old fossil forms, and wonder how such alteration in magnitude and proportions has been brought about, whether by natural selection or otherwise, we have in these Wombats a curious illustration of the phenomenon.

The postpliocene of Australia gives up its *Phascolomys magnus*, a gigantic Wombat. In some beds of the same deposits comes *P. platyrhinus*, which seemingly yet lives; lastly, we find now predominant the but slightly altered and comparatively diminutive form *P. wombat*.

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November 14, 1867.

George Busk, Esq., F.R.S., V.P., in the Chair.

Mr. P. L. Sclater, Secretary to the Society, called attention to the following noticeable additions to the Menagerie, which had been made during the past summer:—

1. An adult specimen of the Golden Tiger-cat of Sumatra (*Felis*

\* Nat. Hist. Mammalia, vol. i. (1846), p. 16.

*aurata*, Temm.)\*, received June 19th in exchange from the Zoological Society of Amsterdam, where the animal had lived several years. A drawing by Wolf (Plate XXXVI.) was exhibited representing this animal, which had not been previously represented in the Society's collection.

2. A Mortier's Tribonyx (*Tribonyx mortieri*, Du Bus), purchased July 1st.

Mr. Selater had already communicated to the 'Annals of Natural



*Tribonyx mortieri.*

\* For synonyms of the species see Dr. Gray's paper, *antea* p. 265.

History'\* a note respecting this scarce bird, which he believed to be the true *Tribonyx mortieri* of Du Bus, while the bird figured under that name by Mr. Gould (B. Austr. vi. pl. 71) appeared to be different, and had been proposed to be called *Tribonyx gouldi*.

3. Seven Ground-squirrels (*Xerus getulus*), from the province of Haha in Morocco, presented to the Society by Sir John Drummond-Hay, K.C.B., C.M.Z.S.†

4. A young Hornbill from West Africa (*Buceros elatus*, Temm. Pl. Col. p. 521), purchased August 19th.

5. A pair of Sömmerring's Antelopes (*Gazella sømmerringi*, Cretzschm. Rüpp. Zool. Atlas, tab. 19), purchased August 21st.

A drawing by Mr. Wolf (Plate XXXVII.) was exhibited representing this beautiful species, which had not been previously exhibited in the Society's Menagerie.

6. A fine example of the black variety of the Leopard (*Felis leopardus*, var. *nigra*), presented to the Society by Major James Langford Pearse, Madras Staff Corps, August 30th. This animal was stated to have been formerly in the menagerie of the Rajah of Mysore.

7. A Bear, presented September 14th by Mr. William Scott Stonehewer, of Ada Lodge, Old Shoreham, Sussex.



Head of *Ursus piscator*.

\* Ser. 3. vol. xx. p. 122 (Aug. 1867).

† This is the *Xerus trivittatus* of Dr. Gray (Ann. N. H. vol. x. p. 264, et ser. 3, vol. xx. p. 334), but is certainly the species known on the continent as the *Sciurus getulus* of Linnæus. Dr. Peters and M. Milne-Edwards, to whom I have shown specimens, both recognize it as such. It is the only species of the group found in Northern Africa that I am acquainted with.—P. L. S.

This Bear was imported into London in a vessel coming from Northern China, and was stated to have been brought from the interior of that country. Its general appearance was that of the Brown Bear (*U. arctos*); but it was distinguishable by its broader face, ears filled with long dense hair, and short beard. Dr. Gray had proposed to found a new species on this example, and to call it *Ursus lasiotus*\*; but Mr. Sclater regarded it as the same animal as that figured by M. I. Geoffroy St.-Hilaire in the 'Zoology of the Voyage of the Venus' (Mamm. t. 4) as "*Ursus arctos*, var. du Kamschatka," upon which M. Pucheran had established his *Ursus piscator* (Rev. Zool. 1855, p. 392).

8. A Formosan Bear (*Ursus formosanus*, Swinhoe), obtained for the Society by Mr. R. Swinhoe, and received September 24th. This animal did not appear distinguishable externally from the *Ursus tibetanus* of Northern India and China.

Referring to this subject, Mr. Sclater read extracts from letters received from Mr. R. Swinhoe, F.Z.S., dated British Consulate, Amoy, June 10th and August 6th, 1867, stating that the Bear sent by him to the Society in October 1866, and spoken of by the Secretary (P. Z. S. 1866, p. 418) as typical of *Ursus formosanus*, Swinhoe, was not from Formosa, but from the Port of Chefoo, on the Shantung Promontory, in Northern China. It was, therefore, the species referred to by Radde (Reisen in O. S. Säug. p. 12) as *Ursus tibetanus*, and not *Ursus formosanus*, which Mr. Swinhoe still regarded as a good species.

9. A female Swinhoe's Deer (*Cervus swinhoii*, Sclater) from Formosa, very acceptable as being the first female received of this species. This animal had likewise been obtained for the Society by Mr. Swinhoe, and received along with the Bear.

10. Two pairs of the Japanese Teal (*Querquedula formosa*, Georgi), purchased September 24th—an importation which it was hoped would lead to the addition of this beautiful species to the list of acclimatizable Waterfowl.

11. A young specimen of the Great Ant-eater (*Myrmecophaga jubata*) from Brazil, presented to the Society October 4th by Dr. John A. Palin, C.M.Z.S., from Brazil.

A second specimen of the same animal from Bogota had been presented to the Society by Percy Brandon, Esq., of Bogota, on the 8th of November.

12. A young Cape Penguin (*Spheniscus demersus* (Linn.)), purchased October 26th, from the Cape.

13. A Black-headed Partridge (*Caccabis melanocephala*, Rüpp.), from Abyssinia, purchased October 30th.

14. A Bourke's Parrakeet (*Euphema bourkii*, Gould), purchased October 30th.

15. A young male Walrus (*Trichechus rosmarus*, Linn.), purchased on the 1st instant, of Messrs. Alexander Stephen and Co. of Dundee, for the sum of £200.

This animal had been captured in Davis's Straits by Captain

\* Ann. Nat. Hist. ser. 3. vol. xx. p. 301.



Richard Wells, of the steam whaler 'Arctic,' belonging to Messrs. Alexander Stephen and Co., on the 28th of August last, under the following circumstances :—A herd of from 200 to 300 of these animals was met with on the ice by the 'Arctic' in lat. 69° N., long. 64° W. A boat's crew was landed on the ice, and the herd attacked and several individuals killed, amongst which was a large female. The body of the latter, being attached to the boat and rowed towards the vessel, was followed by a young male, who swam and dived around and refused to quit his deceased parent. This being noted, he was captured by a noose swung over his head and one fore limb from the ship and hauled on board. For some days the captive was kept tied to a ring-bolt on deck, and refused food altogether. Subsequently he was induced to swallow thin slips of boiled pork, and was thus fed until the vessel reached the Shetlands, when a supply of fresh mussels was provided for its use. A large box with openings at the sides was fabricated; and the animal, secured therein, was brought safely into Dundee on the 26th ult. From that port to London the Walrus had been conveyed in the steamer 'Anglia,' under the care of the Society's Superintendent. The animal was a male, with partially developed tusks, about the same size as the Sea-bear lately in the Society's Gardens, but more bulky in appearance. Although probably not a year old, it was 8 feet long, and weighed perhaps  $2\frac{1}{2}$  cwt.

The only specimen of the Walrus previously acquired by the Society had been a young individual received in 1853, which had been brought home, in a vessel engaged in the seal-fishery on the coast of Spitzbergen, by Capt. Henry of Peterhead. This animal was, however, in a moribund state on its arrival, and lived only a few days in the Gardens\*.

With reference to the present specimen of the Walrus the following remarks were addressed to the Meeting by Mr. A. D. Bartlett, the Superintendent of the Society's Gardens :—

"In the fifth volume of Sir Everard Home's Supplement to the 'Lectures on Comparative Anatomy,' at page 4, on the organs of digestion of the Walrus, it is stated that the food of this animal consisted principally of a species of seaweed; it is, however, remarked that the stomach of this animal differs from all others fitted for this purpose. A figure of the stomach is given in vol. vi. pl. 1; the dimensions are also given in the letterpress and on the plate to scale. According to these figures the stomach is no less than 16 feet in length and 4 feet wide; which wonderful blunder appears to have escaped notice.

"As regards the present animal, I may state that on my arrival at Dundee on the 29th of October, I found the young Walrus in a very restless state, and, as I thought, hungry; it was being fed upon large mussels; about twenty of these were opened at a meal; and the poor beast was thus fed about three times a day."

"I immediately told the owners that I thought the animal was being starved, and suggested that some fish should be tried. To

\* See, for figures taken from this animal, Wolf and Sclater, 'Zool. Sketches,' vol. i. pl. 18.

this Mr. Stephen at once agreed, and a codfish was procured from the neighbourhood, and by me cut into long thin strips. On offering these pieces of cod to the animal, he greedily devoured them. Since that time I have fed the Walrus upon *fish*, *mussels*, *whelks*, *clams*, and the *stomachs* and *intestines* and other soft parts of fishes, cut small; for I find that it cannot swallow anything larger than a walnut. I am now convinced that the food of the Walrus is strictly animal substance; and from what I have observed during the last seventeen days I feel certain that the creature will feed freely upon almost any kind of animal matter."

"I am also inclined to believe that even carrion or decomposed flesh would not be refused. This probably has led to the frequent remarks upon the disgusting state of the contents of their stomachs. May not these creatures be the scavengers of the Arctic Seas, the vultures among mammals? The remarkable dentition reminds one of the carrion-feeding *Proteles*. May not the strong bristles on its muzzle have much to do with this kind of food as well as shrimp-catching, the mode of brushing backwards and forwards with these bristles the food and other substances on the ground, and sucking everything up it swallows?"

"I notice that indigestible portions or substances taken with its food pass off in the excretion; and probably in the adult animal, when shell, seaweed, and other substances are collected, these creatures, like other carnivorous animals, have the power of ejecting these indigestible bodies from the stomach."

"The fragments of shell, small stones, the byssus of the mussels, and the opercula of whelks, together with fragments of seaweed attached to the byssus of the mussels, pass freely from this animal. The terminal portion of the intestines must be of large size, judging by the size of the excretion."

Mr. Sclater also reported the return to this country on the 6th of August last, by the ship 'Marian Moore' from Calcutta, of Mr. Clarence Bartlett, the Society's agent, with a collection of animals, of which the most noticeable were:—

2 Black Tibetan Wolves (*Canis laniger*, Hodgs.). Presented to the Society by Lieut. Alexander A. Kinloch, 2nd Battalion Rifle Brigade, and Lieut. J. Biddulph, 19th Hussars\*.

1 Female Gayal (*Bos frontalis*, Lambert). Presented by the Babu Rajendra Mullick, C.M.Z.S.

2 Pelicans (*Pelecanus*, sp. inc.). Presented by the Babu Rajendra Mullick, C.M.Z.S.

4 Demoiselle Cranes (*Grus virgo*). Presented by the Babu Rajendra Mullick, C.M.Z.S.

2 Polyplectrons, ♀ (*Polyplectron chinquis*). Presented by the Babu Rajendra Mullick, C.M.Z.S.

1 White Fruit-Pigeon (*Carpophaga luctuosa*). Presented by the Babu Rajendra Mullick, C.M.Z.S.

\* These Wolves were obtained in the beginning of June 1866, by Lieut. Kinloch, from some wandering Tartars near the Tshommeriri Lake in Tibet.

1 Fruit-Pigeon (*Carpophaga ænea*). Presented by the Babu Rajendra Mullick, C.M.Z.S.

1 Fruit-Pigeon (*Treron sphenura*). Presented by the Babu Rajendra Mullick, C.M.Z.S.

1 Entellus Monkey (*Semnopithecus entellus*). Presented by the Babu Rajendra Mullick, C.M.Z.S.

1 Panolia Deer (*Cervus eldi*). Presented by A. Grote, Esq., F.Z.S.

1 Slow Loris (*Nycticebus tardigradus*). Presented by A. Grote, Esq., F.Z.S.

1 Hemipode (*Turnix pugnax*). Presented by A. Grote, Esq., F.Z.S.

1 Indian Badger (*Arctonyx collaris*). Presented by Dr. J. Anderson.

1 Slow Loris (*Nycticebus tardigradus*). Presented by Dr. J. Anderson.

8 Water-Tortoises (*Emys*, sp. var.). Presented by Dr. J. Anderson.

The total number of animals brought home by Mr. Bartlett amounted to upwards of thirty, and their value was estimated at about £760.

The Secretary read the following communication from Mr. Edward Newton with reference to a misprint in the last published part of the Society's 'Proceedings:—

"A singular and somewhat important error was introduced into my recent paper (P. Z. S. 1867, p. 344) during its passage through the press.

"I had stated that prior to my visit to the Seychelles only *five* species of land-birds were known to inhabit those islands, and I then proceeded to give their names.

"The word 'five,' which stood rightly enough in the proof, has now been altered into 'six,' the corrector of the press apparently not having understood that I intended to quote *Nectarinia seychellensis* as a synonym of *N. dussumieri*. A reference to the authorities I have cited both in this passage and in my longer paper 'On the Land-birds of the Seychelles Archipelago' (*Ibis*, 1867, pp. 336, 337) will show the necessity of these corrections."

The following communication was read from Dr. G. Hartlaub, For. Memb.:—

"In the Society's 'Proceedings' for 1866, p. 421, Prof. Schlegel writes, 'that *Semiophorus vexillarius* of Gould is based upon specimens (of *Caprimulgus longipennis*) freshly moulted, when part of the long quills has not yet been used.' Now all this is merely and foolishly theoretical. If Prof. Schlegel had ever compared specimens of *Macrodipteryx longipennis* and of *Semiophorus vexillarius*, he would have convinced himself, even *primo aspectu*, of the enormous difference between these two birds. This difference does not only consist in the very different size and the very different colouring of the two birds, but is structural. In *Macrodipteryx longipennis*

the curious long quill-feather is a supernumerary one. It is inserted, as Swainson very accurately remarks, immediately between the primary and secondary quills, and the naked basal or insertional part of it is curiously curved. The apical webs of these feathers are very broad, and show some broad black indistinct bands on a dark blackish ground.

"Now in *Semiophorus vexillarius* there is not even a trace of all this. The long ornamental wing-feather is the regular ninth quill, regularly webbed throughout, and getting more and more narrow towards the tip, where it becomes gradually very narrow; the colour of this feather is a pale brownish grey with whitish shafts on the upperside, and of a uniform brown with the shaft brown on the underside. The eighth quill-feather is double the length of the seventh.

"*Semiophorus vexillarius* is a much larger bird. I give some of the relative dimensions:—

	<i>S. vexillarius.</i>		<i>M. longipennis.</i>	
Long. rostr. a fr. . . . .	0"	5"	0"	3"
— alæ . . . . .	8½	0	6¾	0
— caudæ . . . . .	4	9	3½	0
— tarsus . . . . .	0	11	0	9

"The colour of the wings is totally different in these birds, not less so than their form. In *M. longipennis* all the quills are alternately banded with black and rufous; there is no white on the wing of this species. But the contrary is the case in *S. vexillarius*: in this species the colour of the remiges is of a brilliant black; the outer web of the first has the great middle portion white; the basal portion of all and the apical margin of the smaller quills is pure white, as well as the tips of the larger tectrices.

"The middle of the abdomen, the vent, and the under tail-coverts are pure white in *S. vexillarius*, while these parts are fulvous and darkly fasciated in *M. longipennis*.

"The ground-colour of the underside of the tail is whitish in *S. vexillarius*, pale rufous in *M. longipennis*.

"So much about *S. vexillarius* being the freshly moulted *M. longipennis*. It is sufficient to compare the figures of these species in Swainson's 'West African Birds' and in the 'Ibis.' It is really not necessary to compare actual specimens. An ornithologist of three days' experience will discover the truth of what we have just demonstrated.

"Fine specimens of both these birds are in the Bremen collection.

"By-the-by, I must say with Swainson that I cannot subscribe to the opinion that the laminae in the naked part of the long pen-feathers in *M. longipennis* have been rubbed or worn off. *M. longipennis* is a common bird in collections. Amongst dozens of specimens examined by me I have never seen a bird where the naked parts of the shaft have shown a trace of webs. What may(?) be true in *Prionites* &c. is, I believe, not applicable to these *Caprimulgi*.

"When Prof. Schlegel in the same communication pretends that



*Ardea elegans*, Verr., is identical with *A. garzetta*, he is certainly greatly mistaken. *A. elegans*, of which two fine adult specimens are in the Bremen collection, has nothing whatever to do with *A. garzetta*. It belongs to another group of the *Ardeæ*—to that of *A. comata*. The structure of the long dorsal plumes is very different; and so is the colour of the two birds, *A. elegans* having the head, neck, and the long dorsal plumes of a fine fulvous-isabelline hue, which colour may possibly disappear in specimens which have been for a length of time exposed to the light. *Ardea elegans* is also a much smaller bird than *A. garzetta*. The dimensions of our specimens are:—Rostr. 2" 4"', al. 8" 3"', tars. 2" 3"', dig. med. cum ung. 2" 5"'.

"Again, when Prof. Schlegel says that *Ploceus sakalava* certainly does not come from 'Madagascar,' I should like to know from what source he gets his knowledge. Certainly not from M. Pollen's travels, this traveller having explored only a comparatively small portion of that large island. I can only say this, the specimen, of which I possess a full and good description in an old MS. of my friend Jules Verreaux, was given to that ornithologist by M. Victor Sganzin on his return from Madagascar to the Cape. He collected it during his prolonged stay on that island. Mr. G. R. Gray, when he directed my attention to the specimen in the British Museum, told me that he believed it came from Madagascar. It is of a very different form from *Nelicurvius pensilis*."

Mr. W. H. Flower read a Memoir on the Osteology of the Cachalot, or Sperm-Whale, completing his account of the osseous structure of this animal. Mr. Flower came to the conclusion that there was no sufficient evidence of the existence of more than one species of Sperm-Whale, for which he was of opinion Linnæus's name, *Physeter macrocephalus*, ought to be retained.

This paper will appear in the Society's 'Transactions.'

The following papers were read:—

1. Report on a Collection of Birds formed in the Island of Zanzibar by Dr. John Kirk. By Dr. G. HARTLAUB\*.

1. ELANUS MELANOPTERUS (Daud.).

2. STRIX FLAMMEA, L.

3. CYPSELUS PARVUS, Licht.; Selater, Proc. Zool. Soc. 1865, p. 601.

Two adult specimens and a younger bird. This latter shows the

\* This collection was sent home to me by our Corresponding Member Dr. Kirk, with a request that I would get the specimens worked out and an account of them put in the 'Proceedings.' Dr. Hartlaub has most kindly undertaken this task. Dr. Kirk states that of two raptorial birds (*Haliaeetus vocifer* and *Milvus ægyptius*) which are common at Zanzibar he has not thought it worth while to transmit specimens.—P. L. S.

mottled appearance of the throat ; and the external tail-feathers are shorter and much less attenuated at the tip. The dimensions of the adult bird are :—Long. tota 6" 3"', alæ 4" 9"', rectr. ext. 3" 8"/>.

#### 4. CORACIAS CAUDATA, L.

Zanzibar seems to be the northern frontier of this fine species, on the east coast of Africa ; whereas, on the opposite side, it does not proceed further up than Angola. Speke collected it in Uzaramo, "near the junction of the Kurgén and Myeta Rivers." J. Verreaux mentions a specimen from Kurrichaine. The range of this bird does not extend much further south than the latitude of Natal.

#### 5. HALCYON STRIOLATA, Licht.

The well-known widely distributed species. For the somewhat smaller northern form (*H. chelicuti*) I cannot admit specific separation.

#### 6. IRRISOR ERYTHORHYNCHUS, Lath.

There still remains much uncertainty about these birds. Whether the western and the southern birds are really distinct, as Sir W. Jardine pretends, is still an undecided question to me. I also believe that the colour of the beak is incident to age or season. But the form of that organ is also very variable and individually different. As to the white on the wing, it is curious that the Zanzibar bird has the larger white spots of the western race and the yellowish-green reflexions of the southern individuals. In the end *Irrisor erythrorhynchus* and *I. senegalensis* may turn out to be one and the same species (conf. Jard. Contrib. 1852, p. 344 ; Hartl. West Afr. p. 42).

#### 7. NECTARINIA JARDINII, Verr. ; Hartl. West Afr. p. 47.

One adult specimen.

Zanzibar is a new and interesting locality for this species, all the known specimens of which came from the west coast, where it occurs from Gaboon to Benguela (cf. Barb. du Boc. Possess. Portug. p. 73). There is no difference whatever between the Zanzibar bird and a specimen from Angola in the Bremen collection.

#### 8. NECTARINIA COLLARIS, Vieill. ; Jard. Monogr. Nect. pl. 6 ; Hartl. West Afr. p. 52.

Many years ago this species was collected by Boyer on the island of Zanzibar (Mus. Vindob.). On the west coast it extends from Senegambia to the Equator. There is no difference between eastern and western individuals.

#### 9. NECTARINIA GUTTURALIS (L.).

*Certhia brasiliensis nigricans*, Briss. iii. 658 ; Shaw, Natur. Misc. p. 797.

*Cæreba gutturalis*, Gr. & Bp. Consp. p. 400.

*Nectarinia natalensis*, Jard. Monogr. pl. 12 ; Contr. Orn. 1850, p. 62, c. fig. med.

*Cinnyris discolor*, Bianconi, Spec. Zool. Mos. iii. p. 32.

*C. bianconii*, Hartl.

It was my friend Mr. Otto Finsch who directed my attention to the fact of this beautiful species being the old Brissonian bird! No doubt about it. It is difficult to understand how Gray and Bonaparte could have made a *Cœreba* of it.

There is no material difference between Natal and Zanzibar specimens, though a more eastern species, *N. gutturalis*, has been collected of late by Dr. Welwitsch and others in Loanda (conf. Barb. du Boc. Poss. Portug. p. 7).

10. *CISTICOLA SCHÆNICOLA*, Bp.

Quite the same as the European bird.

11. *IXOS NIGRICANS*, Vieill.

Several adult specimens.

12. *ANDROPADUS FLAVESCENS*, n. sp.

*Supra olivaceus, cauda et alis dorso concoloribus; subtus flavescens, gutture et lateribus olivaceo adumbratis; margine alari et subalaribus late flavis; rostro plumbeo; pedibus nigricantibus.*

Long. 6" 4"', rostr. 6"', alæ 3" 1"', caudæ 2" 10"', tars. 9"'.

Very similar in colour to *Andropadus insularis* from Madagascar, but considerably smaller. There are now eight species of *Andropadus* known, viz. *Andropadi importunus*, *latirostris*, *gracilirostris*, *curvirostris*, *virens*, *erythropterus*, *insularis*, and *flavescens*.

13. *ANTHUS RAALTENII*, Licht.

*A. campestri similinus, sed notæi coloribus omnino intensioribus; gutture confertim et conspicue maculato.*

Long. rostr. 6"', alæ 3" 1"', caudæ 1" 10"', tars. 11½"'.

14. *DRYOSCOPIUS AFFINIS*, Gray, Ann. Mag. N. H. 1837, p. 489; Hartl. West Afr. p. 111.

Originally described from a Zanzibar specimen. Not rare in Gaboon collections.

15. *DRYOSCOPIUS ORIENTALIS*, Swains.

Two specimens, exactly corresponding with the description given by Swainson (Menag. p. 342), in Heine's collection from South Africa (Mus. Hein. i. p. 68).

16. *DRYOSCOPIUS SUBLACTEUS*, Cass.?

Av. jun. *Supra obscure fuliginoso-nigricans; tergi et uropygii plumis longis, laxis, mollibus, maculis anteapicalibus rotundatis albis; uropygii fascia ochroleuca; alarum tectricibus macula minuta rufescente terminatis; subtus albidus, pectore, abdomine imo, crisso, subcaudalibus et cruribus pallide*

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*rufescentibus; rectrice extima apice rufescente; rostro et pedibus nigricanti-plumbeis, mandibula basi pallida.*

Long. circa  $7\frac{1}{2}''$ , rostr.  $10'''$ , alæ  $3'' 3'''$ , caudæ  $2'' 11'''$ , tars.  $13\frac{1}{2}'''$ .

A young bird, probably of the above-named species. Wants further inquiry.

There is a *Dryoscopus* from Gaboon in the Bremen Museum exactly like *D. major*, but much smaller, my *D. picatus*. The dimensions are:—Long. tota  $8''$ , rostr.  $9\frac{1}{2}'''$  ( $11'''$  maj.), alæ  $3'' 3'''$  ( $3'' 11'''$  maj.), caudæ  $3''$  ( $3'' 11'''$  maj.), tars.  $14'''$  ( $15\frac{1}{2}'''$  maj.).

#### 17. EUPLECTES FLAMMICEPS, Sw.

A Zanzibar specimen of this bird, obtained by Boyer, is in the Vienna collection. Monteiro collected this species at Pembe, and Dr. Welwitsch at Golungo, also in the interior of Angola (Barb. du Boc. Poss. Portug. p. 11).

#### 18. MUNIA ORYZIVORA (L.).

We hope that Dr. Kirk will explain under what particular circumstances he collected this common but exclusively Indian bird?

#### 19. SPERMESTES FRINGILLOIDES (Lafr.); Hartl. West Afr. p. 147.

A rare and less typical species, not quite without pretensions to generic separation. Senegal and Liberia, on the slave coast, are western habitats of this bird.

#### 20. SPERMESTES CUCULLATA, Sw. = *S. scutata*, Hengl.

Extensively distributed over the African continent. No material difference between specimens from the Upper White Nile and those from Angola.

#### 21. HYPHANTORNIS SUBAUREUS, Sm.

Three specimens.

A nearly allied species (*H. royrei*, Verr.), a description of which was published by me in Cabanis's 'Journal,' is very probably not distinct from *H. aurantius*, Vieill.

#### 22. PASSER DIFFUSUS, Sm. Rep. of an Exped. p. 50; Hartl. West. Afr. p. 150.

*Pyrgita spadicea*, Licht. Verz. Vög. Kafferl. p. 15.

Zanzibar is a new locality for this bird. On the west coast it has not been observed higher up than Angola.

#### 23. PSITTACUS FUSCICAPILLUS, Verr.

Two fine specimens.

#### 24. CHRYSOCOCCYX AURATUS, Gm.

#### 25. CENTROPUS SUPERCILIOSUS, Rüpp.

Schlegel may be right in taking this bird for a younger state of *C. monachus*, R.



26. *TRERON DELALANDII*, Bp.

27. *PERISTERA AFRA* (L.).

28. *TURTUR ALBIVENTRIS*, Gray, = *T. semitorquatus*, Swains.; Hartl. West Afr. p. 196.

29. *TURTUR ERYTHROPHRYS*, Swains. = *T. semitorquatus*, Rüpp.; Hartl. West Afr. p. 195.

30. *FRANCOLINUS KIRKII*, n. sp.

Mas ad. (calcar.). *Diversus a F. pileato, cui valde affinis, statura minore; rectricibus lateralibus nigris; uropygii plumis tectricibusque caudæ superioribus pallide flavescentibus, maculis anteapicalibus subtriquetris nigris; plumis lateralibus pectoris et epigastrii ochraceis, stria intermedia nigra, albido marginata; remigibus saturate fuscis, scapis intense fuscis; subcaudalibus latius transversim variis.*

Long. rostr. 9", alæ 5", tars.  $14\frac{1}{3}$ ", dig. med. c. ung. 16".

One specimen. I know few things more annoying and disagreeable than to describe and characterize a new bird from a poor and incomplete skin. This is exactly what I am doing now. Superficially seen from above, this Francolin is no other than a small *F. pileatus*. By a more accurate inspection it is not difficult to discover several important discrepancies. The arrow-shaped black spots of the upper tail-coverts would alone suffice to characterize this bird as distinct from *F. pileatus*. But the whole under parts, which are very defective and mutilated in our specimen, appear to be differently coloured, &c. Besides it is altogether a smaller bird.

31. *SQUATAROLA HELVETICA* (L.).

32. *CHARADRIUS HIATICULA*, L.

33. *CHARADRIUS GEOFFROYI*, Wagl.; Schleg. Mus. Pays-Bas, livr. 7. p. 39.

The coasts of the Red Sea have been hitherto the only known African localities for this rather Indo-Australian species.

34. *NUMENIUS PHÆOPUS*, L.

35. *ACTITIS HYPOLEUCA* (L.).

36. *LIMNOCORAX FLAVIROSTRIS*, Sw.

37. *ARDEA PUSILLA*, Vieill. (*A. minuta australis*, Schleg.).

38. *ARDEA GULARIS*, Bosk.

39. *ARDEA ATRICAPILLA*, Afzel.

40. *ARDEA COMATA*, Pall.

41. *ANAS ERYTHORHYNCHA*, Gm.

42. *PODICEPS MINOR*, L.

Of the forty-two Zanzibar species here enumerated there are only three exclusively eastern—*Psittacus fuscicapillus*, *Andropadus flavescens*, and *Francolinus kirkii*. Six are essentially South African—*Dryoscopus orientalis*, *Ixos nigricans*, *Coracias caudata*, *Passer diffusus*, *Hyphantornis subaureus*, and *Treron delalandii*; two of these, *Coracias caudata* and *Passer diffusus*, extend up the western coast to Angola. Most of the remaining species have a wider distribution. As occupying a very extensive range we may name *Cypselus parvus*, *Halcyon striolata*, *Irisor erythrorhynchus*, *Spermestes cucullata*, *Chrysococcyx auratus*, *Centropus monachus*, *Turtur albigentris*, *Turtur erythrophrys*, *Limnocorax flavirostris*, *Ardea gularis*, *Ardea atricapilla*, and *Anas erythrorhyncha*.

## 2. On a Collection of Birds from some less-known Localities in the Western Pacific. By Dr. G. HARTLAUB.

(Plate XXXVIII.)

The collectors of Mr. Johann Cæsar Godeffroy of Hamburg have of late touched at some localities not before explored by scientific expeditions. These localities are the Pelew or Palaos group (Western Caroline Islands), the Matelotas with the Island of Yap, the more northern Mackenzie Islands, and the Echiquier or Bougainville group near the northern coast of New Guinea. The collection contains twenty-three species, four of which are very probably new, and will prove an interesting addition to our knowledge of oceanic ornithology.

1. *PANDION HALIAËTUS*, var. *LEUCOCEPHALUS*, Gould.

One adult specimen from the Echiquier Island. Other oceanic localities for this widely distributed species are the Isle of Pines, where the Forsters observed it (Descr. Anim. ed. Lichtenst. p. 257), and Tonga-Tabu (G. R. Gray, Tropic. Isl. p. 1). Not yet observed on the great island of New Guinea.

2. *TRICHOGLOSSUS MASSENÆ*, Souancé.

One adult specimen from the Echiquier Island. In every respect similar to a specimen from the Salomons in the Bremen Museum.

"Eyes red, with a yellow ring."

3. *HALCYON ALBICILLA* (Cuv.).

Five specimens from the Pelew group. These specimens show all the different states of plumage mentioned by Dumont and Lesson in birds collected on the Marian Islands by Quoy and Gaimard. Whether these differences are sexual or dependent on age is yet uncertain. In one of the Pelew birds the whole upper head is of

the fine greenish-blue colour of the back ; a second has the forehead and superciliaries white ; in another the crown of the head is white, with some bluish feathers in the middle, the auricular region and a very narrow interrupted nuchal collar being of the same colour ; in a somewhat younger specimen there is only one dark spot on the white cap, and the colour of the back is an obsolete dirty green.

For the complete synonymy of this species, conf. Cab. Mus. Hein. ii. p. 159. "Tanatick" inc.

The only existing original figure is that of Gould's (*Halcyon saurophaga*), in the 'Zoology of the Sulphur.' It shows the head all white.

*H. albicilla* has been collected on the Marian Islands, New Ireland, New Guinea, Batjan, Morotay, and the Pelew group.

#### 4. MYZOMELA RUBRATRA, Less.

Two ad. spec., Pelew group and Carolines. "Sisebanjo" inc.

The Pelew group has been already indicated by G. R. Gray as a locality for this species. Von Kittlitz observed it on the island of Ualan, and gives interesting details about its manners, propagation, &c. We consider the *Myzomela major* of Bonaparte to be a merely nominal species (conf. Von Kittl. Reise, i. p. 381).

#### 5. COLLOCALIA VANICORENSIS (Q. & G.).

It is extremely difficult and uncertain to find out definite differential characters between some of these *Collocaliæ*. A fine specimen of the true *C. fuciphaga* from the island of Réunion, in the Bremen collection, resembles in almost every respect our *Collocaliæ* from the Viti and Pelew group!

Inc. "Cobusock." Von Kittlitz mentions this bird under the name of *Cypselus inquietus*. He describes it as observed on the island of Ualan (Reise, ii. p. 26).

#### 6. MONARCHA GODEFFROYI, n. sp. (Pl. XXXVIII.)

Ad. *Alba* ; capite toto cum mento et gutture, alis et cauda nigris ; subalaribus et subcaudalibus nigris ; rectricibus nonnullis lateralibus macula alba minuta vix conspicua apicali notatis ; rostro plumbeo, tomis et apice pallidioribus ; pedibus nigricantibus. Long. circa  $7\frac{1}{2}$ " , rostr. a fr. 7" , alæ 3" 2" , caudæ 3" , tars. 10" .

Jun. (œm.?). *Dorso nigro alboque vario ; collo toto albo ; capite, alis, cauda, pectore et abdomine nigris.*

Juv. *Supra sordide cinerascens, fulvo lavata ; tergo uropygiogae magis fulvescentibus ; remigibus et tectricibus fulvo marginatis ; gastræo ochroleuco.*

Perhaps confined to the island of Yap, where the three specimens here described were shot. This fine new bird is nearly allied to *Monarcha rugensis*, from the much more eastern Hogoëu group. But the distribution of the black and white colour is altogether different.

7. *MONARCHA FULVIVENTRIS*, n. sp.

*Pallide cinerea, alis et cauda subfuscescentibus; pectore, abdomine, subalaribus et subcaudalibus dilute fulvo-cinnamomeis; rostro plumbeo, tomis et apice pallidioribus; pedibus, ut videtur, pallidis; iride rubra.*

Long. 8", rostr. a fr. 7", alæ 3" 4", caudæ 2" 9", tars. 9".

One specimen from the Echiquier group. Perhaps a female. Nearly allied to *M. inornata* of Lesson, which I have not seen. But the colour of the abdomen is by no means a "brun marron," and the secondary remiges are without a trace of the ferruginous margin so conspicuous in the figure given by Lesson and Garnot (Zool. Coq. pl. 15. f. 1).

Another bird of very similar colouring is *Monarcha cinerascens* (Temm.), of Timor.

8. *CALORNIS KITTLITZII*, Finsch & Hartl., Beitr. z. Faun. Central-Polyn. p. 109.

*Lamprotornis columbinus*, Kittl.

Four specimens from the Caroline Islands. "Kinis" inc. Iris yellow.

An Ualan specimen is in the Bremen collection. The younger bird is more brownish, and has much less of the greenish metallic gloss.

The naturalists of the 'Novara' Expedition collected this species on the island of Puynipet, Semiavin group. It seems to be distributed over the whole archipelago of the Carolines.

9. *CARPOPHAGA OCEANICA*, Less.

Two specimens from the Pelew group. "Kajep" incol. "Eyes red, with a yellow margin."

For interesting biological details of this widely distributed Pigeon see Von Kittl. Reise, i. p. 377; for a full account of it conf. Finsch et Hartl. Beitr. Faun. Central-Polyn. p. 142.

A good reduced figure is given by Kittlitz (Kupfert. t. 33. f. 1).

10. *MEGAPODIUS SENEX*, n. sp.

*Ad. Pileo et nucha dilute canis, nonnihil brunnescens; capitis lateribus colloque toto in fundo nudiussculo rubro sparsim plumosis; collo et interscapulio nigricanti-schistaceis; corpore reliquo obscure plumbeo-olivascens; rostro gracili, flavo; pedibus flavis, digitis et unguibus nigris.*

Long. circa 11", rostr. a fr. 7", alæ 6" 3", caudæ 2" 1", tars. 2" 3", dig. med. c. ung. 2"  $\frac{1}{2}$ ".

One specimen from the Pelew group. All my efforts to reduce this species to any of the described have been fruitless.

11. *MEGAPODIUS EREMITA*, n. sp.

*Dorso, alis et cauda olivascens-fuscis, cauda distinctius rufescente; collo et gastræo toto magis cinerascens; abdomine*



*inferiore, crisso et subcaudalibus magis in olivaceum vergentibus; capitis lateribus gulaque nudiusculis, rubicundis, sparsim plumosis; vertice et occipite plumis ravioribus obscure cinerascenscentibus; sincipite nudiusculo, rubro, nigro, subpiloso; rostro flavo, basi obscuro; pedibus obscuris; iride rubra.*

Long. circa  $12\frac{1}{2}$ ", rostr. a fr.  $6\frac{1}{2}$ ", alæ 8", caudæ  $2\frac{1}{2}$ ", tars.  $2\frac{1}{2}$ ", dig. med. c. ung.  $2''$   $1'''$ .

One specimen from the Echiquier Island. Inc. "Apagei."

12. RALLUS PHILIPPENSIS, auct.

Two specimens from the Pelew group. "Tareth" incol. Iris red.

13. RALLINA FASCIATA, Raffl.

One specimen from the Pelew Islands. "Olaratta" inc. "Eyes red, with a yellow ring."

In every respect like Javan specimens. The geographical distribution of this species is certainly a curious fact amongst the *Rallidæ*. It has been observed in the islands of Java and Sumatra, in the peninsula of Malacca, in the Philippines, and now for the first time in the Pelew group.

14. ARDEA SACRA, Gm.

One specimen, a younger bird, from the Matelotas.

15. NUMENIUS PHÆOPUS, L.

Specimens from the Pelew and Matelotas Islands.

16. STREPSILAS INTERPRES, L.

A young bird in winter dress from the Pelew group.

17. STERNA LUNATA, Peale.

Two young birds from the Pelews.

*Fronte, abdomine et interscapulio albis, vertice nigro-maculato, nucha et collo postico largius nigro variis; dorso, alis et cauda cinereis, dorso pallidior, alis obscurioribus, subfusciscentibus, scapis remigum fasciæque lata longitudinali pogonii interni albis; rectricibus pallide cinereis, pogonio interno versus basin albis; margine alari et subalaribus albis; rostro nigro.*

18. DYSPORUS SULA (L.).

An adult specimen from the Pelew Islands.

19. DYSPORUS PISCATOR (L.).

Pelew group.

20. TACHYPETES MINOR (Gm.).

One specimen from the Mackenzie group.

21. *GYGIS ALBA* (L.), Pall.

Pelew Islands. Von Kittlitz describes the very young bird (Reise, ii. p. 158).

22. *ANAS SUPERCILIOSA*, L.

Two pullets in spirits from an uncertain locality.

23. *PUFFINUS OPISTHOMELAS*, Coues.

Four specimens from the Pelew Islands. "Kokeio" incol.

Var. *minor*: *subcaudalibus totis nigro-fuliginosis*.

The type of Coues's description from Cape St. Lucas is a somewhat larger bird; but, there being no other difference between it and our Pelew bird, I prefer considering this latter a smaller race. The dimensions of our specimens are:—Long. tota 11–11½", rectr. 12–12½", alæ 3" 4–7", tars. 17".

3. On a New Species of *Callene* from the Pulney Hills in Southern India. By WILLIAM T. BLANFORD, Assoc. Roy. School of Mines, C.M.Z.S. &c.\*

(Plate XXXIX.)

The Rev. S. Fairbank has sent to me for description a very interesting new species of bird which he has recently shot upon the Pulney Hills, a lofty portion of the great range which stretches along the southern parts of the western coast of India, from the remarkable gap of Paulghatcherry, which divides the range from the Nilghiri hills, to Cape Comorin. This fine tract of hill country, about 150 miles in length and, in its northern portion, 60 to 70 miles broad, contains a very interesting fauna having, as might be expected, close affinities with that of Ceylon, and also with that of the Nilghiris, but still containing many peculiar forms. It has, however, hitherto been neglected in the most remarkable manner, and there is no portion of the Indian peninsula concerning the zoology of which so little is known. This may appear opposed to Dr. Günther's statement in the 'Reptiles of British India,' in which he asserts that the southern corner of India with Ceylon, including Travancore, the Nilghiris, Mysore, &c., is one of the best-explored parts of the country. Most Indian naturalists will probably be inclined to think that "best-explored" is a misprint for "worst-explored;" but, in fact, the mistake is one which few naturalists who had no personal knowledge of India would have avoided. The fauna of Ceylon, thanks

\* Along with the present communication Mr. Blanford sent specimens of the bird described and its eggs for exhibition to the Meeting,—also skins of *Salpornis spilonota*, Franklin, *Emberiza huttoni*, Blyth, and *Hirundo fluminicola*, Jerdon.—P. L. S.

to its large European population and the number of energetic naturalists who have devoted themselves to the investigation of its zoology, has been very fairly made known; that of the Nilghiris has also been pretty well ascertained, the Reptilia especially having been very thoroughly worked out by Dr. Jerdon and Captain Beddome; and the Reptilia and Mollusca of a small portion of the southern range have been collected by Captain Beddome, almost the only naturalist who has ever penetrated the Anamallay hills (which adjoin the Pulneys); but of the fauna of the great range I have just described in general, less is known than of that of Bhotan or of the hills of Arakan.

It is therefore not surprising that the first ornithological novelty which has been obtained from Southern India since the publication of Dr. Jerdon's list of the birds in the years 1839-44 in the 'Madras Journal of Literature and Science' should have been procured from the Pulney hills, a group 7000 feet in height, forming the north-eastern corner of the mountainous tract above described. It is very interesting, however, to obtain from these hills a third representative form of the genus *Callene* (formerly *Cinclidium*) of Blyth, proposed first for a species inhabiting the Eastern Himalayas (*C. frontalis*, Blyth), and made by Jerdon, undoubtedly with justice, to include a Nilghiri bird first discovered by himself (*C. rufiventris*, Blyth). This distribution illustrates one of the most remarkable peculiarities in the fauna of Peninsular India, a peculiarity to which I will refer after first giving the description of the new species.

*CalIENE ALBIVENTRIS*, Fairbank. (Pl. XXXIX.)

*Fusco-cyanea, mento lorisque holosericeo-nigris, fascia frontali albescenti-cærulea, rectricibus remigibusque fuscis cærulescente marginatis, abdomine medio albo, lateribus cinerascens; rostro nigro, pedibus fuscis, iridibus brunneis.*

Long. tota 6, alæ 3·1, caudæ 2·6, rostri a fronte 0·5, a rictu 0·75, tarsi 1·1 poll. Angl. et dec.

*Hab.* Montes Pulney dictos Indiæ meridionalis, ad alt. circa 6000-7000 ped. Angl. in dumetis et sylvis.

*C. albiventris* is similar in form to the Nilghiri *C. rufiventris*, Blyth; but it is rather smaller and differs widely in colour, being much bluer above, with a distinct light-blue, almost whitish, frontal band, instead of the faint indication which alone exists in *C. rufiventris*. There is no trace of the ferruginous abdomen of that species; and the white in the new species is not, like the rufous colour in *C. rufiventris*, spread over the whole lower parts from the breast downwards, but is almost confined to the centre of the abdomen and the lower tail-coverts, shading gradually into slaty on the flanks.

*C. frontalis*, Blyth, of the Sikkim and Nipal Himalayas, is a still larger bird than *C. rufiventris*, with a longer tail. The frontal band is of a darker and richer blue than in *C. albiventris*, and the abdomen is grey. The blue of *C. albiventris* is purer and less dusky than that of either of the two other species, and, so far as can be judged by the somewhat faded specimens in the Asiatic Society's

Museum in Calcutta, resembles rather the colour of *Brachypteryx cruralis*.

The sexes do not appear to differ. In the two specimens sent by Mr. Fairbank the female is a little the paler; but this appears due to the male being in brighter and fresher plumage.

*Callene albiventris* inhabits the thick patches of forest (called Sholas), which are so remarkable a character in the hills of Southern India. It appears to be scarce. The eggs, two of which are sent, are two in number, of an olive-brown colour, darker at the larger end, measuring 0.92 and 0.63 inch in their greater and less diameters. Mr. Fairbank writes thus:—"The nest I found in a small hole, just big enough for it, in the trunk of a tree a yard above the ground. It was neatly made of moss and fibrous roots. I surprised the female on the nest several times. She laid two eggs in April, and was incubating when I discovered and took them. In June another nest was built in the same hole, and two eggs were laid, and then the bird began to sit. . . . . The song is sweet and loud (not so loud as that of *Merula simillima* or *Trochalopteron jerdoni*) and varied, though it is generally confined to four notes—sol, la, si, do."

We have thus, on the Nilghiri and Pulney hills in Southern India, two representatives of an Eastern Himalayan form, with, like most Eastern Himalayan forms, strong Malayan affinities. This case is the type of many others; and the remarkable peculiarity to which I alluded above is the representation of Himalayan types with Malay affinities, which are wanting throughout the plains of India, in the higher hill-groups of the southern portion of the peninsula and of Ceylon.

The fauna of the plains of India has very nearly as marked affinities with that of Africa as with that of Malaynesia, as is shown by the occurrence of antelopes, the nylgai, gazelles, the lion, the hunting-leopard, *Felis chaus*, *F. caracal*, hyænas, wolves, foxes, bustards, sand-grouse, &c. &c., not one of which is represented to the eastward, or is found in the hills of Southern India and Ceylon. In those hills, however, are numerous representatives of the Malay fauna of the Himalayas, such as *Trochalopteron* and *Garrulax* among the birds, *Diplommantina* and *Alycaeus* among the land-shells; and it is to this representation of Himalayan forms, as I have before pointed out with reference to the land-shells, that I believe the greater portion of the affinity, where such really exists, between the fauna of Ceylon and that of Malaynesia is due. This subject, however, which has not received the attention it deserves, is one to which I hope to recur before long.

P.S. Since writing the above I have seen the specimens of the bird referred by Mr. Fairbank to *Trochalopteron jerdoni*, Blyth, and I am strongly inclined to believe that, although very closely allied to that species, it is a distinguishable race.

## 4. Notes upon Three Asiatic Species of Deer.

By EDWARD BLYTH.

Upon a former occasion I exhibited at a Meeting of this Society (see P. Z. S. 1863, p. 155) some loose horns of a species of Deer believed to inhabit Siam, which I named in honour of my late friend Sir Robert H. Schomburgk, who at that time filled the position of H.B.M. Consul at Bangkok. When that accomplished naturalist returned from Siam he brought a miscellaneous collection of objects of natural history from that country, many of which were disposed of by auction after his decease. It contained two splendid pairs of horns of *Rucervus schomburgki*, and one very fine pair of horns of the Siamese variety or distinct race of *Panolia eldi*, which has been designated *P. platyceros* by Dr. Gray, as distinguished from his *P. acuticornis*. Those three pairs of horns were purchased for the British Museum, and I have there had photographs taken of them, which, with some other photographs and drawings illustrative of the different forms of *Rucervus*, Hodgson, and *Panolia*, Gray, I here submit for publication in the Society's 'Proceedings'\*.

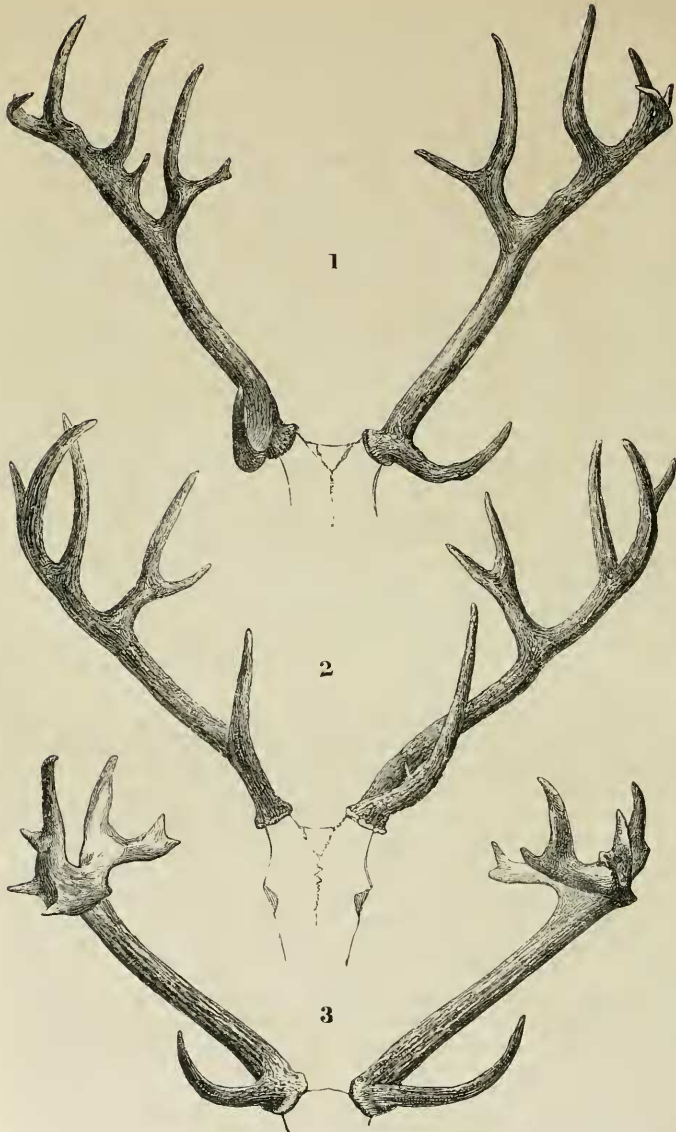
Figs. 1, 2, 3 represent three pairs of horns of the Indian *R. duvaucelli*, the lowermost being those of an aged buck with extraordinarily developed "crown," in the museum of the Asiatic Society, Calcutta. Fig. 4 represents the finest pair of horns of this species that I have seen, and which I sketched many years ago when in the possession of the late Frank Russell, Esq., of the Bengal Civil Service. Fig. 5 represents a pair in which the near affinity of *Rucervus* to *Panolia* is at once recognized.

Figs. 6 to 12 (inclusive) represent the horns of *R. schomburgki*, fig. 6 being the only pair of the series which is still attached to the frontlet. This pair and that represented in two aspects of view by figs. 7 and 8 are the two pairs which belonged to Schomburgk, and I regard the last referred to as a genuine pair, although detached from the frontal bones. Figs. 10 and 11 I consider to represent odd horns matched, as also figs. 9 and 12. These three fine pairs, or rather series of six odd horns, were rescued from the stock of a cutler in Sheffield, who said that he had converted many like them into knife-handles. Both figs. 6 and 11, it will be remarked, have forked brow-antlers; and the near resemblance of several of these beautiful horns to the largest of the three which I formerly figured and restored conjecturally when first bringing the species to notice, will not fail to excite attention. The characteristic style of ramification is prominently observable. With regard to the animal, I have not been able to learn anything whatever, excepting that I have been assured that a living buck of the species is at this time living in the Jardin des Plantes at Paris.

Figs. 13 to 16 (inclusive) represent four specimens of *P. eldi*

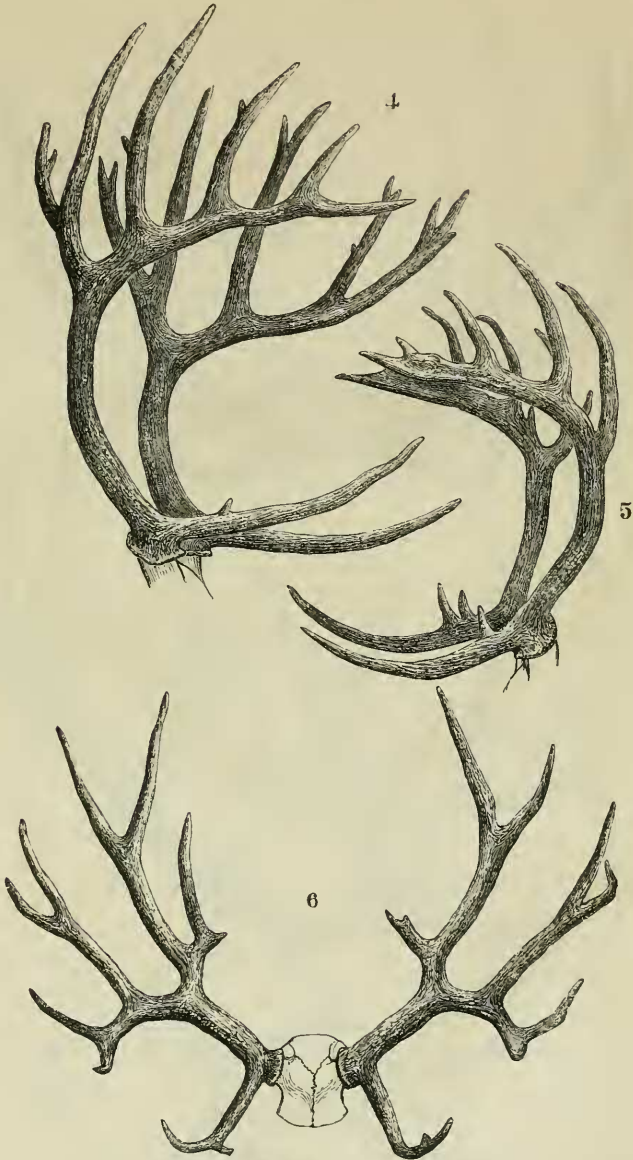
\* Three additional fine pairs of horns of *R. schomburgki* have been subsequently received, and are now in the national collection. These I have also had photographed, as the pair with branching brow-antlers (fig. 11).





Horns of *Rucervus duvaucelli*.

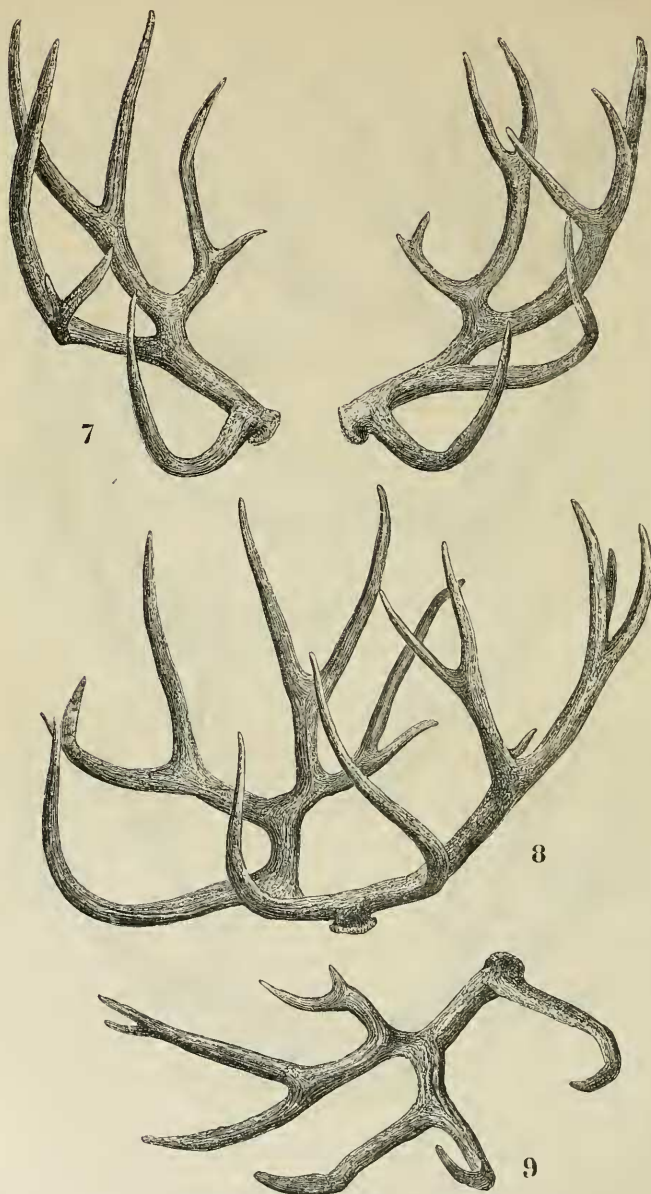
(misprinted *eedii* in the British Museum Catalogue) from Pegu, and a small specimen (fig. 17) from the valley of Manipur, which is wholly unbranched. I am assured by Col. Guthrie, formerly of the



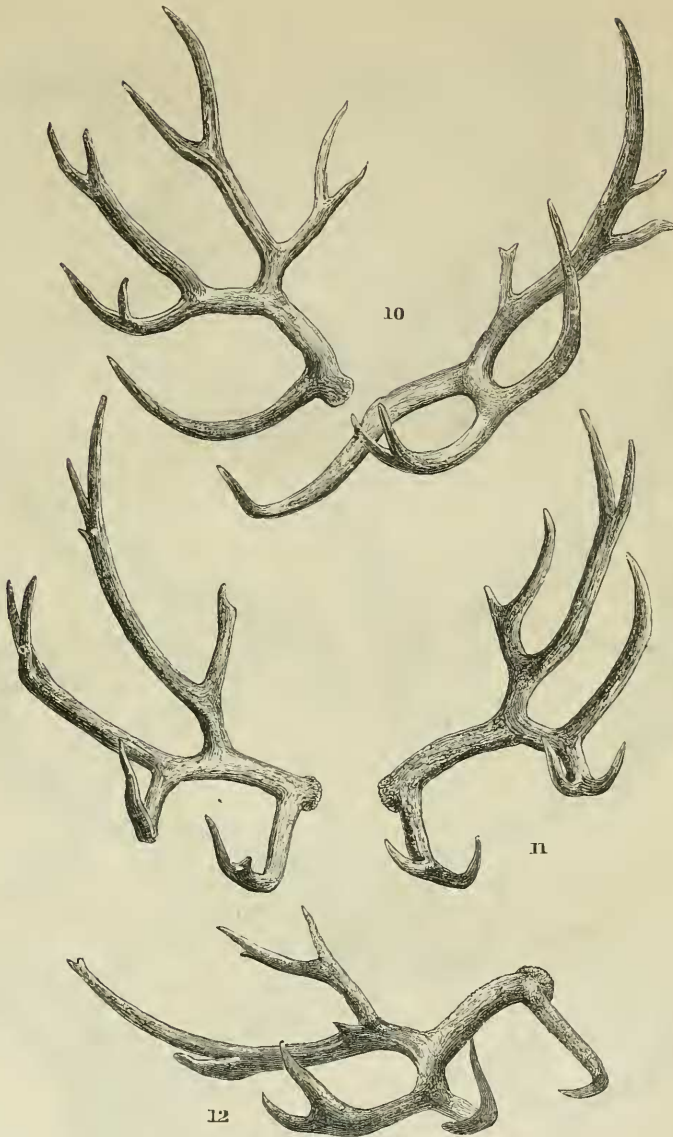
Figs. 4, 5. Horns of *Rucervus duvaucelli*. Fig. 6. Horns of *R. schomburgki*.

Bengal Engineers, who first brought this species to notice and dedicated it to his friend Lieut. Eld\*, that he once possessed the horns

\* Calcutta Journal of Natural History, vol. ii. p. 115 (1842), pl. 12.

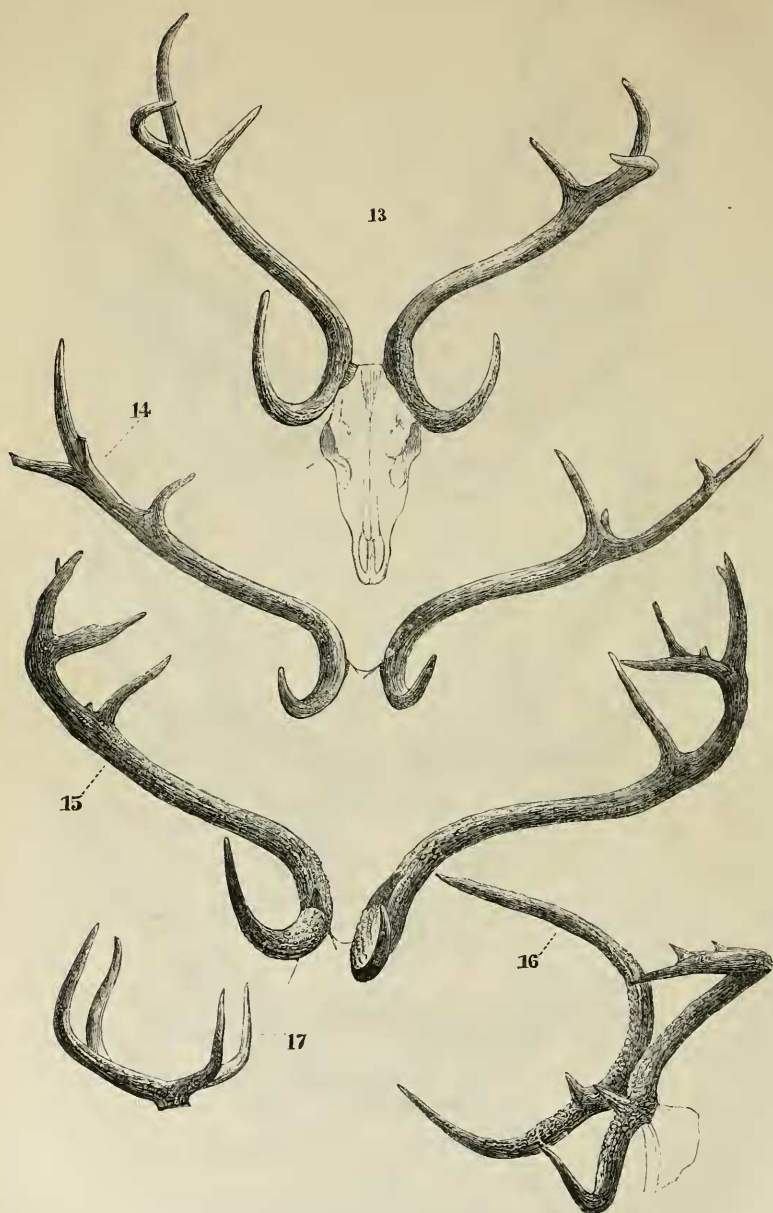


Horns of *Rucervus schomburgki*.



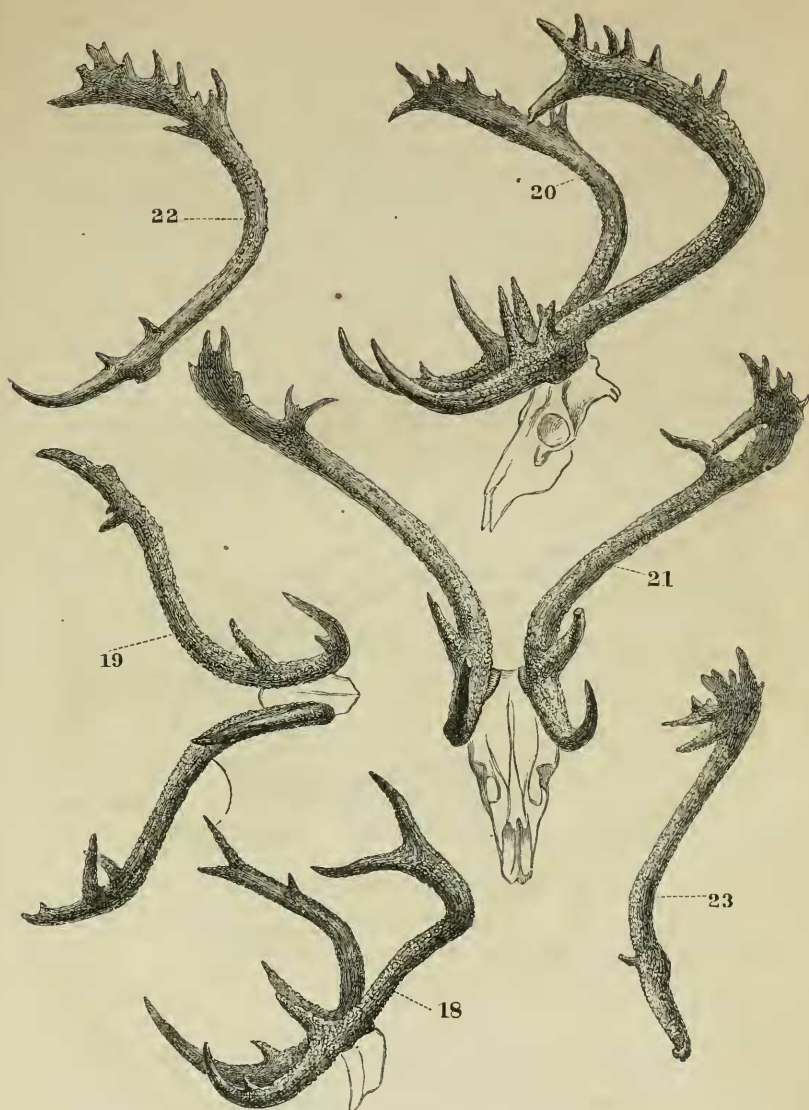
Horns of *Rucervus schomburgki*.

of a mature animal, from Manipur, similarly unbranched, and with the line of the beam continuous with that of the brow-antler. "The generality of the stags of Manipur," however, according to Lieut.



Horns of *Panolia eldi*.



Horns of *Panolia eldi*.

Eld, "have from six to ten branches or snags; but I have killed very old ones," he adds, "with no less than sixteen clearly defined branches," *i. e.* on the pair. I have seen numerous specimens both from Manipur and Pegu, which are essentially similar in character.

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They have commonly a prominent vertical snag near the base of the brow-antler, as represented in figs. 15 and 16. This particular race is the *Panolia acuticornis* of Dr. Gray, being identical with *Cervus frontalis*, McClelland, and *C. lyratus*, Schinz; also, as I believe, with *C. dimorphe*, Hodgson, figured and described in the 'Journal of the Asiatic Society of Bengal,' vol. xxii. p. 897,—the horns in that specimen, which is now in the British Museum, being somewhat abnormally developed in a state of captivity. Further to the south, in the province of Mergui and in that of Quedda, the horns of this animal appear to be constantly shorter, and have commonly two or three prominent vertical snags on the brow-antler. In figs. 18 and 19, a characteristic example of this variety (procured from Quedda by the late Dr. Cantor, and now in the India Museum) is figured in two aspects of view. In the Museum of the Asiatic Society, Calcutta, there are several specimens of similar character from Mergui, and I have never seen an example with more elongated beam from that province. A third and more strongly marked variety is that from Siam, of which the particular horn upon which Dr. Gray founded his *P. platyceros* is represented in figs. 22 and 23; while figs. 20 and 21 represent a head of this variety from the collection of the late Sir R. H. Schomburgk. The brow-antlers, as will be observed, have several vertical snags; and the crown is laterally much flattened and remarkably serrated, with a series of small tines on its posterior margin. I have seen, probably, more than a hundred pairs of horns of the preceding varieties, but none even approaching in the form of crown to this Siamese race, which Dr. Gray has perhaps rightly discriminated, though further knowledge of the animal is required to decide how far it may be worthy of distinction by a separate name. It is not improbably a well-marked second race of *Panolia*, as *Rucervus schomburgki* is undoubtedly a second race of that subtype; and in the latter instance the geographical area inhabited by the ordinary *P. eldi* intervenes between the range of distribution of *Rucervus duvaucelli* and that of *R. schomburgki*.

#### DESCRIPTION OF THE FIGURES.

##### *Rucervus duvaucelli*.

Figs. 1, 2, 5. Ordinary well-developed horns.

4. Remarkably fine.

3. Horns of an aged individual.

##### *Rucervus schomburgki*.

6. Horns on frontlet, procured by Schomburgk.

7, 8. Another pair, procured by Schomburgk.

9-12. Series of odd horns, imported for commercial purposes.

##### *Panolia eldi*.

13-17. Pegu and Manipur variety.

18, 19. Mergui and Quedda variety. Specimen procured from Quedda by the late Dr. Theodore Cantor.

20, 21. Siamese race (*P. platyceros*, Gray). Specimen procured by Schomburgk.

22, 23. Type specimen described as *P. platyceros*.

5. Batraciens nouveaux de l'Afrique occidentale (Loanda et Benguella). Par M. J. V. BARBOZA DU BOCAGE, F.M.Z.S.

1. *RANA ANCHIETÆ*. (Fig. 1.)

Tête large, à museau allongé et pointu; narines placées un peu plus près du bout du museau que de l'œil; tympan à peine égal aux  $\frac{2}{3}$  du diamètre de l'œil; dents vomériennes en deux petites séries, situées précisément au-devant des arrière-narines et séparées par un large intervalle. Aux membres antérieurs les 2<sup>e</sup> et 4<sup>e</sup> doigts égaux, le 3<sup>e</sup> le plus grand; orteils palmés jusqu'à la base de la dernière phalange, excepté le 4<sup>e</sup> dont les deux dernières phalanges sont libres. Un seul tubercule sur le métatarse à son bord interne. Quatre plis longitudinaux de la peau, de chaque côté du dos, étroits et distinctement granuleux; le dessus de la tête et les intervalles des plis dorsaux parsemés de petits tubercules; des tubercules plus gros et confluent couvrent les flancs, le partout de l'anus et la moitié postérieure du dessous de la cuisse. La peau est lisse en dessous sans aucune trace de granulations ni de pores.

Fig. 1.



*Rana anchietæ.*

Régions supérieures d'une teinte grisâtre ou olivâtre, marbrées de brun ou variées de petites taches brunes plus ou moins distinctes; sur la face externe des membres des bandes transversales d'un brun plus foncé; un petit trait noirâtre du bout du museau à l'œil en passant par la narine; une tache allongée du même couleur s'étendant de l'œil à l'épaule par-dessus le tympan. La face postérieure des cuisses est d'un brun rougeâtre ou couleur chocolat, avec de petites taches rondes et de vermiculations jaunes. Parties inférieures blanches ou d'un blanc jaunâtre. Sur quelques individus la face inférieure des cuisses se montre colorée d'un jaune vif.

Dimensions (d'un individu mâle) : Du bout du museau à l'anus 48 millimètres, memb. ant. 28 millim., memb. post. 86 millim.

*Hab.* Benguella, d'où nous avons regus plusieurs individus par M. d'Anchieta.

Ressemble par la taille et par l'ensemble des formes à la *R. bibrani*, Hall. (*R. supraciliaris*, Günther), mais les caractères indiqués ci-dessus me semblent suffisants pour la bien distinguer.

## 2. *HYPEROLIUS INSIGNIS.* (Fig. 2.)

Tympan caché, tête courte à museau court et arrondi ; langue large, fendue en arrière ; yeux gros et saillants ; peau lisse sur le dos et sur les flancs, granuleuse sur la gorge et la face inférieure du tronc et des cuisses ; un petit amas de granulations vers l'angle de la mâchoire ; doigts réunis à la base par une petite palmure, orteils complètement palmés, à l'exception du 4<sup>e</sup> dont la dernière phalange est libre. Couleur générale (dans l'alcool) d'un jaune teint de rouge ; sur le dos deux larges bandes longitudinales d'un bleu noir lisérées de rouge vif, confluentes chez quelques individus sur le museau au-devant des yeux ; une raie plus étroite de la même couleur, également lisérée de rouge va de l'œil à l'épaule, et avance plus ou moins interrompue jusqu'à l'aîne ; sur les bords de la mâchoire supérieure des petites taches bleues bordées de rouge ; d'autres taches semblables, mais plus grandes et irrégulières, couvrent la face dorsale des membres antérieurs et postérieurs, à l'exception des cuisses qui sont unicolores. La gorge pointillée de noir.

Fig. 2.



*Hyperolius insignis.*

La coloration d'un certain nombre d'individus ne paraît pas sensiblement altérée par leur séjour dans l'alcool, tandis que d'autres, conservés dans le même bocal, présentent la teinte bleue remplacée par un gris cendré terne ; cependant le liséré rouge y reste toujours bien distinct.

Dimensions : Du bout du museau à l'anus 37 millim., memb. ant. 21 millim., memb. post. 58 millim.

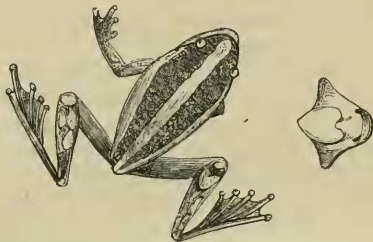
*Hab.* Benguella. Plusieurs individus envoyés par M. d'Anchieta.

L'espèce est connue des naturels sous le nom de "Gimbots," qu'ils donnent également à d'autres petits batraciens.

3. *HYPEROLIUS TOULSONII*. (Fig. 3.)

Tympan caché; tête large à museau court et arrondi; langue petite, cordiforme, fendue en arrière; peau lisse en dessus, granuleuse en dessous et sur les flancs; une très-petite palmure à la base des doigts; orteils réunis par une membrane jusqu'à la base de la dernière phalange.

Fig. 3.

*Hyperolius toulsonii*.

Coloration (dans l'alcool): En dessus, sur un fond d'une teinte de plomb, trois larges bandes longitudinales blanches, l'une sur la ligne dorsale du bout du museau à l'anus, les autres naissant de chaque côté derrière l'œil et se dirigeant le long de la partie supérieure des flancs; les cuisses couleur de plomb uniforme; la jambe en dessous et le pied, ainsi que la face inférieure des membres antérieurs et la main, d'un brun foncé; région gutturale et ventre blancs; sur la face dorsale des membres antérieurs et de la jambe des larges taches arrondies blanches; un trait noirâtre, bordé de blanc en dessous, du bout du museau à la tempe, en traversant l'œil; bord de la mâchoire supérieure couleur de plomb.

Dimensions: Du bout du museau à l'anus 26 millim., memb. ant. 16 millim., memb. post. 39 millim.

*Hab.* Loanda. Un individu envoyé par M. Toulson.

4. *BUFO SPINOSUS*, nov. sp.?

Tête large, déprimée, plane; bords orbitaires supérieurs non saillants; parotides allongées, étroites, parallèles à la ligne dorsale, trois fois plus longues que larges; pas de glande sur la face supérieure de la jambe; tympan distinct, égalant presque le diamètre de l'œil; doigts libres, le 3<sup>e</sup> beaucoup plus long que le 2<sup>e</sup> et le 4<sup>e</sup>, qui sont égaux; orteils réunis par la membrane jusqu'à moins de la moitié de leur longueur, le 4<sup>e</sup> d'un tiers plus long que le 5<sup>e</sup>. Les callosités du talon plus volumineuses que celles de la paume de la main; un pli de la peau, bien prononcé, au bord interne du tarse; sans tubercules. La peau des parties supérieures, à l'exception de celle qui couvre le milieu du crâne et le museau, est partout couverte de gros tubercules garnis d'épines cornées noirâtres; les plus gros de ces tubercules portent au centre une épine beaucoup plus forte que les autres.



Parotides et régions supra-orbitaires également couvertes d'épines. En dessous la peau est granuleuse.

Coloration: En dessus d'un brun cendré avec des taches brun foncé bordées de noir, distribuées plus ou moins régulièrement sur la tête, le dos et la face supérieure des membres; en dessous, d'un brun jaunâtre uniforme sur le ventre et la face inférieure des membres, et d'un noir fuligineux pointillé de jaunâtre sur la gorge.

Dimensions: Tête et tronc réunis 68 millim., memb. ant. 46 millim., memb. post. 83 millim.

*Hab.* Benguella. Un seul individu par M. d'Anchieta; il porte le nom vulgaire de "Minongo."

Ce crapaud se rapproche beaucoup du *B. tuberosus*, Günther (Batr. Salientia, p. 60, pl. 3. fig. C), dont il semble différer par la forme des parotides, par des épines moins fortes sur les tubercules cutanés, par l'existence d'un pli de la peau au bord interne du tarse, tandis que chez l'espèce de Fernando Po ce pli n'existe pas et est remplacé par des tubercules, &c. Cependant pour arriver à une opinion décisive il conviendrait de pouvoir comparer les deux espèces.

## 6. The Fishes of Seychelles. By Lieut.-Colonel R. L.

PLAYFAIR, F.Z.S., H.M. Consul-General in Algeria.

(Plates XL. & XLI.)

The Seychelles Archipelago is included in the region the ichthyology of which was described in 'The Fishes of Zanzibar.' Since the publication of that volume I have paid another visit to those remarkable islands; and during a stay of nearly two months there I have been enabled to add very considerably to my former collections. I have obtained fifty-five additional species, of which five are new to science, and I have observed many others not previously known to exist there. In all I am enabled to publish a list of 211 species, only fifteen of which are given on other authority than my own observation.

I cannot refrain from recording the obligation I owe to Swinburne Ward, Esq., H.M. Civil Commissioner, whose interest in everything connected with sport and natural science is as unbounded as his hospitality.

## ACANTHOPTERYGII.

### PERCIDÆ.

1. *ETELIS CARBUNCULUS*, C. & V.

2. *APRION VIRESCENS*, C. & V.

3. *ANYPERODON LEUCOGRAMMICUS*, Reinw.

Two specimens of this fish were obtained at Seychelles,—the first

exactly identical with those previously described; the second an adult male, 21 inches long, differing in coloration only.

It is brownish on the back, lighter on the belly; the entire body and fins, including even the thick outer membranes of the eyes, covered with round red spots; these are largest on the body, smallest on the occiput and snout, and hardly conspicuous on the pectoral rays. The white lateral bands were quite inconspicuous in the fresh state, but after maceration in spirits for several weeks a faint trace of them has become visible.

4. *SERRANUS LOUTI*, Forsk.

5. *S. ERYTHREUS*, C. & V.

6. *S. CYANOSTIGMATOIDES*, Blkr.

7. *S. MINIATUS*, Forsk.

8. *S. GUTTATUS*.

*Perca miniata* var. B, Forsk. p. 41.

*Bodianus guttatus*, Bl. t. 224.

*Serranus myriaster*, Cuv. & Val. ii. p. 365; Rüpp. Atlas, Fische, p. 107, t. 27. f. 1; Quoy & Gaim. Voy. Astrol. p. 653, pl. 3. f. 1; Less. Voy. Coqu. pl. 37.

*S. guttatus*, Pet. Wieg. Archiv, 1855, p. 235; Günth. Fish. i. p. 119 (not C. & V.).

The specimens from Seychelles have exceedingly fine denticulations to the præoperculum, and five or six darker cross bands on the body behind the termination of the pectorals. Length 9 inches.

9. *SERRANUS SONNERATI*, C. & V.

10. *S. SUILLUS*, C. & V.

11. *S. DISPAR*, Playf.

12. *S. MARGINALIS*, Bl.

13. *S. HOEVENII*, Blkr.

14. *S. HEXAGONATUS*, Forst.

15. *S. FLAVO-CÆRULEUS*, Lacép.

16. *S. GAIMARDI*.

*Serranus gaimardi*, ? Bleek. Nat. Tydschr. Ned. Ind. 1853, Batav. p. 455; Quoy & Gaim. Voy. Astrol. Poiss. p. 656, pl. 3. f. 3; Günth. Fish. i. p. 150.

In 'The Fishes of Zanzibar' I considered *S. gaimardi*, Blkr., identical with *S. longispinis*, Kner; but I have obtained another example at Seychelles which leads me to doubt the propriety of having done so. The Zanzibar specimens exactly correspond to that described in the 'Voyage of the Novara,' while the Seychelles one

agrees with that in the 'Voyage of the Astrolabe.' The latter is distinguished not only by the form, number, and distribution of the spots, but by the greater height of the body, and the shape of the spinous portion of the dorsal.

*Diagnosis*.—Caudalis with rather convex posterior margin. The length of the head is contained thrice and three-quarters, and the height of the body four times in the total length. Diameter of the eye one-fifth of the length of the head. The upper maxillary does not extend as far as the posterior margin of the orbit. Præoperculum serrated, with four or five stronger denticulations at the angle; sub- and interoperculum entire; operculum with three points, the upper of which is minute, and the middle one very long. Scales ciliated. Third dorsal spine longest, but not half the length of the head. The third anal spine longest?

*Colour*.—Brownish, with numerous small yellow spots, which are smaller and more distinct on the head than on the body. Spinous dorsal with indistinct yellowish spots, soft portion with a yellow margin and two series of distinct and one (the basal) series of indistinct large round brown spots, about eight in each. Anal and caudal blackish, with numerous large dark brown spots, the latter with a yellow margin. Ventrals and pectorals similarly spotted.

Length 14 inches.

17. *S. AREOLATUS*, Forsk.

There is not the slightest doubt that the fish described in Günther's 'Catalogue,' and quoted in 'The Fishes of Zanzibar,' is the true *S. areolatus* of Forskåll, and of the 'Hist. Nat. des Poissons.' On a recent visit to the Paris Museum, specimens of this species were shown to me bearing the name of *angularis*, Cuv. Probably these were not the typical specimens of *angularis*, but were confounded with it at some later period. Cuvier's description of the latter agrees perfectly with a specimen in the British Museum.

18. *S. CHLOROSTIGMA*, C. & V.

19. *S. CYLINDRICUS*, Gthr.

20. *PLECTROPOMA MACULATUM*, Bl.

21. *POGONOPERCA OCELLATA*.

*Pogonoperca ocellata*, Günth. Fish. i. p. 169.

Two specimens of this remarkable fish were obtained at Seychelles, where it appears quite unknown to the fishermen. Only two other examples are known to exist, one in the British and the other in the Paris Museum.

22. *GENYOROGES SEBÆ*, C. & V.

23. *G. BENGALENSIS*, C. & V.

24. *G. RIVULATA*, C. & V.

25. *G. CIVIS*, C. & V.

26. *MESOPRION ARGENTIMACULATUS*, Forsk.

27. *M. GEMBRA*, Schn.

A specimen from Seychelles is remarkable as having an indistinct black blotch on the lateral line, below the first rays of the dorsal, occupying about five or six series of scales. Length  $12\frac{1}{2}$  inches. Creole name "Giblot."

28. *M. MACHAS*.

*M. machas*, Cuv. & Val. vii. p. 446; Günth. Fish. i. p. 200.

D.  $\frac{10}{13}$ . A.  $\frac{3}{9}$ . L. lat. 58-60. L. trans. 7/17.

*Diagnosis*.—Height of body nearly equal to length of head, and contained from thrice and two-thirds to four times in the total length. Diameter of eye about one-fourth of the length of head. Upper profile of head descending at a slight angle, rather straight; jaws equal in front; upper maxillary not reaching as far back as centre of eye. Suprascapular and præoperculum entire, the latter slightly notched; a small knob on the interoperculum, which is entirely covered with scales. Caudal truncate; pectorals reaching as far as vent; dorsal spines feeble, the fourth longest; the third of anal rather longer and stronger than the second.

*Colour*.—Olive, with yellow oblique streaks above the lateral line, and three longitudinal ones below it, of which the second, from the posterior of orbit to back of tail, is broadest. Dorsal, anal, and caudal fins yellow; upper half of pectorals yellow, lower half rosy.

Length  $11\frac{1}{2}$  inches.

29. *M. FULVIFLAMMA*, Forsk.

30. *M. ERYTHROGNATHUS*, C. & V.

31. *M. LUTJANUS*, C. & V.

32. *M. VITTA*, Q. & G.

33. *M. ERYTHRINUS*.

*Diacope erythrina*, Rüpp. N. W. Fische, p. 92, t. 23, f. 2.

*Mesoprion erythrinus*, Günth. Fish. i. p. 199.

D.  $\frac{10-11}{14}$ . A.  $\frac{3}{9}$ . L. lat. 65.

The specimen observed at Seychelles differs slightly from that described by Rüppell; but there is little doubt of their identity.

*Diagnosis*.—Height of body twice and four-fifths, and length of head thrice and two-thirds in the total length. Upper profile of head gibbous above the eyes. Snout elongate, pointed; lower jaw prominent. Diameter of eye one-sixth of the length of the head. Præoperculum finely serrated, with a shallow notch; knob of interoperculum not very prominent. Pectorals pointed, reaching to vent. Caudal subtruncated.

*Colour*.—Bright red; dorsal, caudal, and anal with very narrow black margins; ventrals stained with blackish.

Length 18 inches. Creole name "Bourgeois."

*Hab.* Seychelles; Red Sea.

34. *PRIACANTHUS SPECULUM*.

*Priacanthus speculum*, Cuv. & Val. vii. p. 471; Règne Anim. Ill. Poiss. pl. 11. f. 1; Günth. Fish. i. p. 221.

D.  $\frac{10}{14}$ . A.  $\frac{3}{15}$ . L. lat. 84.

*Diagnosis*.—Caudal crescent-shaped, the exterior rays being somewhat produced. The height of the body is contained thrice and fourth-fifths, and the length of the head rather more than four times in the total length. The diameter of the eye is equal to the length of the snout, and is contained twice and two-thirds in the length of the head. Præoperculum finely denticulated, with a small serrated spine at the angle. Operculum, sub- and interoperculum entire; the first with two small spines. The posterior opening of the nostril is a long narrow slit, four times as long as broad. Dorsal spines increasing in length posteriorly, the last being twice the height of the second; the fifth ray is longest. The first three spines and all the rays have a rough surface. The middle rays of the anal are nearly half as long as the body is high; both spines and rays are striated. Ventrals elongated, reaching to the third anal spine.

*Colour*.—Red; all the fins except the pectorals have blackish edges.

Length 11 inches. Creole name "Miroir."

35. *PRIACANTHUS FAX*, C. & V.

36. *AMBASSIS COMMERSONII*, Forsk.

37. *A. UROTENIA*, Blkr.

38. *A. DUSSUMIERI*, C. & V.

39. *APOGON HYALOSOMA*, Blkr.

40. *A. FASCIATUS*, White.

41. *A. CYANOSOMA*, Blkr.

42. *DULES FUSCUS*, C. & V.

PRISTIPOMATIDÆ.

43. *THERAPON SERVUS*, Forsk.

44. *PRISTIPOMA LEUCURUM*, C. & V.

45. *DIAGRAMMA AFFINE*, Gthr.

46. *D. GRISEUM*, C. & V.

Several specimens of this fish were caught in a mountain-torrent



in Seychelles, which loses itself in a sand-bank without reaching the sea. The only direct communication between the two is after unusually heavy floods; so that it would appear that this salt-water species not only visits, but habitually lives, in fresh water.

47. *DIAGRAMMA PUNCTATISSIMUM*, sp. n. (Pl. XL.)

D.  $\frac{12}{19}$ . A.  $\frac{3}{7}$ . L. lat. 90-95.

Allied to *D. pardalis* and *D. gaterina*, but differing from these principally in the size of the scales.

*Diagnosis*.—Height of body thrice and two-thirds in the total length; length of head four times in the same. Diameter of eye a fourth of the length of the head. Lips thick, swollen. The upper maxillary barely reaches the vertical from the anterior nostril. Præoperculum with the posterior limb slightly inclining forwards, with a very shallow emargination in the middle, and, together with the angle, moderately denticulated. Dorsal fin rather deeply notched, the fourth and fifth spines longest; they are contained twice and a half in the length of the head, and are longer than the longest ray. The second and third anal spines are about equal in length, but the former is much the stronger; they are hardly shorter than the fourth dorsal ray. Caudal truncated. The free portion of the tail below the termination of the dorsal is less than the distance thence to the base of the caudal.

*Colour*.—Grey; the upper two-thirds of the head and trunk, the soft dorsal, anal, and caudal covered with rather large, crowded, blackish spots, occupying from two to five series of scales. The spinous dorsal with a broad black margin, and a series of large black spots along the middle, the largest being half the diameter of the orbit. Soft dorsal with a narrow black margin. Pectorals grey, with a red black-edged spot at the axil, one or two reddish black spots on the base, and the membrane behind the base red. Ventrals with two red spots on the base superiorly.

Length  $16\frac{1}{2}$  inches.

48. *DIAGRAMMA CENTURIO*, C. & V.

49. *SCOLOPSIS FRENATUS*, C. & V.

50. *S. PHEOPS*.

*Scolopsides phæops*, Bennett, Proc. Comm. Zool. Soc. i. p. 165.

*Scolopsis phæops*, Günth. Fish. i. p. 358.

*Hab.* Seychelles; Mauritius.

51. *PENTAPUS AUROLINEATUS*.

*Sparus lineatus*, Lacép. iv. p. 132.

*Pentapus aurolineatus*, Cuv. & Val. vi. pp. 269, 559, pl. 157; Günth. Fish. i. p. 381.

*Hab.* Seychelles; Mauritius; Molucca Sea; Louisiade archipelago.

## 52. APHAREUS FURCATUS.

*Labrus furcatus*, Lacép. iii. pp. 424, 477, pl. 21. f. 1.

*Caranxamorus sacrestinus*, Lacép. v. p. 682.

*Aphareus carulescens*, Cuv. & Val. vi. p. 487, pl. 162 b.

*A. furcatus*, Günth. Fish. i. p. 386.

Creole name "Vivant au grande gueule."

Hab. Seychelles; Mauritius.

## 53. CESIO STRIATUS, Rüpp.

## 54. C. MACULATUS.

*Cesio maculatus*, Cuv. & Val. vi. p. 439; Günth. Fish. i. p. 391.

D.  $\frac{10}{16}$ . A.  $\frac{2}{13}$ . L. lat. 65. L. transv.  $\frac{7}{14}$ .

*Diagnosis*.—Height of body four and a half, and length of head four and two-thirds in the total length; diameter of eye thrice and four-fifths in the length of the head, and rather shorter than the interorbital space. The entire vertical fins scaly; only two anal spines.

*Colour*.—Deep blue above; each scale with a lighter centre, an indistinct yellow band from suprascapular, along the series of scales next but one above the lateral line. A black band along each caudal lobe. Axil black.

Length 12 inches.

## SQUAMIPINNES.

## 55. CHÆTODON SETIFER, Bl.

## 56. C. ZANZIBARENSIS, Playf.

## 57. C. TRIFASCIATUS, Mungo Park.

## 58. HENIOCHUS MACROLEPIDOTUS, L.

## 59. HOLACANTHUS IGNATIUS, sp. n. (Pl. XLI.)

D.  $\frac{13}{22}$ . A.  $\frac{3}{10}$ . L. lat. ca. 72.

*Diagnosis*.—Præopercular spine smooth, shorter than the diameter of the eye. Præoperculum slightly serrated on the posterior edge, a few minute spines on the anterior portion of its lower limb. Other opercles entire. A few conspicuous denticulations on the inferior edge of præorbital. Dorsal and anal fins much produced posteriorly, extending beyond the posterior of caudal. Anal spines long, the third nearly equal to the longest of the dorsal. Caudal rounded. Scales small, very irregularly arranged, about seventy-two between upper angle of operculum and root of caudal.

*Colour*.—Dull yellowish; the body densely spotted with black; head and breast without such spots; a blue streak along the median line of snout; another from occiput, skirting anterior margin of orbit, to middle of lower præopercular limb. Vertical fins spotted with pale blue, and with a few undulating lines along their base.

Dorsal and anal with a narrow blue margin, the extreme points of the produced portions being yellow. Caudal with a very narrow white margin. Ventrals with a few more or less interrupted blue lines along the rays.

Length  $7\frac{1}{2}$  inches. Creole name "Ignace."

#### MULLIDÆ.

60. *MULLUS VITTATUS*, Forsk.

61. *M. BARBERINUS*, Lacép.

62. *M. OXYCEPHALUS*, Blkr.

63. *M. LUTEUS*, C. & V.

64. *M. DISPILURUS*, Playf.

65. *M. FRATERCULUS*, C. & V.

66. *M. FLAVOLINEATUS*.

*M. flavolineatus*, Lacép. iii. p. 406.

*Upeneus flavolineatus*, Cuv. & Val. iii. p. 456; Rüpp. N. W. Fische, p. 101, t. 26. f. 1.

*Mulloides flavolineatus*, Bleek. Nat. Tydschr. Ned. Ind. 1852, Ceram, ii. p. 697; Günth. Fish. i. p. 403.

*Hab.* Seychelles; Bombay; from Red Sea to Chinese Seas.

67. *M. CYCLOSTOMA*.

*M. cyclostomus*, Lacép. iii. p. 404, pl. 19. f. 3 (bad).

*Sciæna heptacanthus*, Lacép. iv. pp. 308, 312.

*Upeneus cyclostomus*, Cuv. & Val. iii. p. 472; Rüpp. N.W. Fische, p. 101; Günth. Fish. i. p. 409.

*Hab.* Seychelles; from Red Sea, through Indian Ocean, to East-Indian archipelago.

#### SPARIDÆ.

68. *CANTHARUS GRANDOCULIS*, C. & V.

69. *LETHRINUS LONGIROSTRIS*, Playf.

70. ? *LETHRINUS GENIVITTATUS*.

? *Lethrinus genivittatus*, Cuv. & Val. vi. p. 306, pl. 159; Steindachner, Verhandl. zool.-bot. Ges. Wien, 1866, p. 478; Playf. in Fishes of Zanzib. p. 144.

D.  $\frac{10}{9}$ . A.  $\frac{3}{8}$ . L. lat. 50. L. transv. 5/15.

*Diagnosis*.—No true molars; teeth conical, moderately strong. Height of body equal to length of head, and one-fourth of the total length. Diameter of eye about one-fourth of the length of the head, and half that of the snout, which is pointed and conical. The maxillary does not nearly reach the vertical from the anterior nostril. The interspace between the eyes is about equal to their diameter.

Third dorsal spine longest, and twice and a half in the length of the head.

*Colour*.—Olive, each scale with a darker margin. The naked parts of the head, including the opercular margin, dark; a bright pink spot, half as large as the eye, at the angle of operculum; sometimes a small pink blotch at the root of the pectoral, and on the middle of its superior margin. Caudal with a pink posterior margin.

Length 11 inches. Creole name "L'éclair."

71. *LETHRINUS RAMAK*, Forsk.

72. *L. NEBULOSUS*, Forsk.

73. *L. STRIATUS*.

*L. striatus*, Steindn. Verhandl. zool.-bot. Ges. Wien, 1866, p. 479, pl. 5. f. 3; Playf. in Fishes of Zanz. p. 145.

A specimen of this species was observed at Seychelles, corresponding exactly to Dr. Steindachner's description, and very distinctly different from the specimen of *L. nebulosus* obtained at the same place. Creole name "L'éclair."

74. *L. CÆRULEUS*, C. & V.

75. *L. CROCODERUS*, C. & V.

76. *CHRYSOPHRYS SARBA*, Forsk.

77. *SPHÆRODON GRANDOCULIS*.

*Sciæna grandoculis*, Forsk. p. 53.

*Chrysophrys grandoculis*, Cuv. & Val. vi. p. 134.

*Sphærodon grandoculis*, Rüpp. N. W. Fische, p. 113, t. 28. f. 2; Günth. Fish. i. p. 465.

*Hab.* Seychelles; Red Sea.

78. *CHRYSOPHRYS SARBA*, Forsk.

#### SCORPÆNIDÆ.

79. *SCORPÆNA POLYPRION*.

*Scorpana polyprion*, Bleek. Natur. Tydsch. Neder. Ind. 1849, Scleroparei, p. 21; Verhand. Batav. Gen. xxii. Bali, p. 5; *ibid.* Sclerop. p. 7; Günth. Fish. ii. p. 115.

Creole name "Laf."

*Hab.* Seychelles; East-Indian archipelago.

#### TEUTHIDIDÆ.

80. *TEUTHIS CORALLINA*, C. & V.

81. *T. SUTOR*, C. & V.

82. *T. ROSTRATA*, C. & V.

## 83. T. MARGARITIFERA.

*Amphacanthus margaritifera*, C. & V. x. p. 145.

*Teuthis margaritifera*, Günth. Fish. iii. p. 317.

*Diagnosis*.—Height of body rather more than one-third of the total length. Caudal emarginate, the lobes pointed.

*Colour*.—Brown, with rather large pale blue spots, those in the middle of the sides are largest and have brown centres. Fins immaculate.

Length 11 inches. Creole name "Cordonnier."

*Hab.* Seychelles; East-Indian archipelago.

## BERYCIDÆ.

## 84. MYRIPRISTIS PRALINIUS, C. &amp; V.

## 85. HOLOCENTRUM RUBRUM, Forsk.

## 86. H. SPINIFERUM, C. &amp; V.

## 87. H. DIADEMA, Lacép.

## 88. H. LÆVE.

*H. læve*, Günth. Fish. i. p. 47, pl. 6. f. B.

The specimen from Seychelles differs slightly from those in the British Museum in the formula of the fins &c.; the former has:—

D.  $10\frac{1}{12}$ . A.  $\frac{4}{8}$ . L. lat. 42. L. transv.  $3/8$ .

*Hab.* Seychelles; Louisiade archipelago; Salomon Islands; Amboyna.

## 89. HOLOCENTRUM CAUDIMACULATUM.

*Holocentrum spiniferum*, Cuv. & Val. iii. p. 206, vii. p. 498; Rüpp. Atlas, Fische, p. 86, t. 23. f. 1 (not N. W. Fische).

*Holocentrus caudimaculatus*, Rüpp. N. W. Fische, p. 97.

*Holocentrum caudimaculatum*, Günth. Fish. i. p. 41.

D. 11 | 14. A.  $\frac{4}{9}$ . L. lat. 40. L. transv.  $3/7$ .

*Diagnosis*.—Height of body contained thrice and a half, and length of head thrice and two-thirds in the total length; interocular space five times and a half in the length of the head. Operculum with two flat spines, the upper of which is largest. Third and fourth dorsal spines longest; the soft portion higher than the spinous, but less than half the height of body. The upper maxillary bone does not reach as far as the centre of eye. Upper caudal lobe longest, and contained five times and a third in the total length. Third anal spine much longer and stronger than the fourth. Length of snout equal to diameter of eye.

*Colour*.—Red, each scale with a vertical silvery crescent-shaped stripe. A large silvery spot on the back of tail, behind termination of dorsal. A dark red spot behind angle of præoperculum. Fins rosy; the points of the lobes of the spinous dorsal, the anterior mar-



gin of soft portion, the exterior margins of caudal, the membrane between the third and fourth spines of anal, and the superior margin of pectorals darker. A white red-edged spot at axil of pectorals.

*Description of the specimen.*—Form rather elongate. Snout long, equal to diameter of eye. The interocular space is contained five times and a half in the length of the head; the two central bony ridges distant from one another and parallel. The groove for the process of the intermaxillary bones goes as far back as the anterior third of the eye, and is equal to the length of the snout. The turbinal bone terminates in front in two spines, the upper of which is directed forward, the lower downward; it does not cover the intermaxillary. The upper maxillary bone reaches below the anterior third of the eye, the diameter of which is contained thrice and a half in the length of the head, the operculum and spine included.

All the opercles are striated and denticulated, as also are the scapular and humeral bones.

The præopercular margin is inclined forwards, terminating in a large and strong spine, longer than half the margin above it, which is coarsely denticulated. The opercular spines are broad and flat, the upper being the longer. Suboperculum entire, except on the upper third, where the striæ are produced beyond the edge. Interoperculum strongly and irregularly denticulated.

Dorsal spines moderately strong, the third and fourth longest, but shorter than the soft portion, which is less than half the height of body. First spine of anal minute; the second is one-fifth of the third; the third is very long and strong, much more so than the fourth, or than any other spine or ray in the vertical fins; it is half the height of the body, and nearly one-fifth of the total length; the fourth can be entirely hidden in the groove of the third. Superior lobe of caudal longest, and contained five times and one-third in the total length. Pectorals contained five times and two-thirds in the same, and about equal to the ventrals; the spine of the latter is two-thirds of its length; the longest ray reaches to the thirteenth scale of the lateral line, and is remote from the vent.

Scales not striated, but strongly serrated on the edge, and having numerous pores or perforations.

Length  $8\frac{1}{2}$  inches.

Creole name of this and the other species of *Holocentrum* and *Myripristis*, "Lion."

*Hab.* Seychelles; Red Sea.

#### POLYNEMIDÆ.

##### 90. POLYNEMUS SEXFILIS, C. & V.

#### XIPHIIDÆ.

##### 91. HISTIOPHORUS BREVIROSTRIS, Playf.

##### 92. H. GLADIUS.

*Scomber gladius*, Brouss. Mém. Acad. Sc. 1786, p. 454, pl. 10.

*Istiophorus gladius*, Lacép. iii. pp. 374, 375.

*Xiphias ensis*, Lacép. ii. p. 296.

*Histiophorus indicus*, Cuv. & Val. viii. p. 293, pl. 229; Cuv. Règ. Anim. III. Poiss. pl. 53. f. 1.

*H. americanus*, Cuv. & Val. viii. p. 303.

*H. gladius*, Günth. Fish. ii. p. 513.

I am indebted to Mr. Ward for the head, portion of the skin, and the entire fins of a very interesting specimen of *Histiophorus* captured at Mahé. This differs from *H. gladius* in several important points, such as the depressed shape of the rostrum, which in *H. gladius* is conical and of much greater length; nevertheless, as my specimen is so incomplete, and as there is so strong a resemblance between the two, I hesitate to describe this as a new species. The following is a description of the specimen:—

D. 42 | 7. A. 11 | 6. V. 1. P. 18.

The first three dorsal spines short and closely united to the fourth, which is roughly granulated and considerably longer than the produced portion of the rostrum; the next seven spines do not differ greatly in length; the fifteenth to the thirty-sixth are much produced, the longest being longer than the length of the head; the last six are short, the longest being less than half the diameter of orbit. Second dorsal fin emarginate above; the first and last rays longest, and longer than any of the spines after the thirty-sixth. Second anal similar to second dorsal; the first is more elevated, the longest spine being one-half the length of the fourth of the dorsal. The ventral consists of a single ray, its length is equal to the distance from the centre of orbit to end of snout. Pectorals much shorter, about half as long as head. Two conspicuous keels on each side of base of caudal. The caudal lobes are about one-fourth of the total length, measured from end of snout to fork of caudal.

The upper profile of head descends nearly in a straight line; *upper jaw depressed, much broader than deep*. The distance from the end of snout to posterior margin of orbit is about two-thirds of the length of the entire head. *The produced portion of rostrum about equal to the distance from the extremity of the mandible to the posterior limb of the præoperculum.*

Dermal productions numerous, lanceolate, hidden in the skin.

Membranes of first dorsal fin with numerous round light spots.

Creole name "L'empereur."

	ft.	in.
Total length, to fork of caudal . . . . .	7	8
Length of head . . . . .	2	9
—— of produced part of upper jaw . . . . .	1	2
—— of upper jaw from angle of mouth . . . . .	2	2
—— of pectorals . . . . .	1	0
—— of ventrals . . . . .	2	0
Greatest height of dorsal . . . . .	3	0
Length of caudal lobes . . . . .	1	9

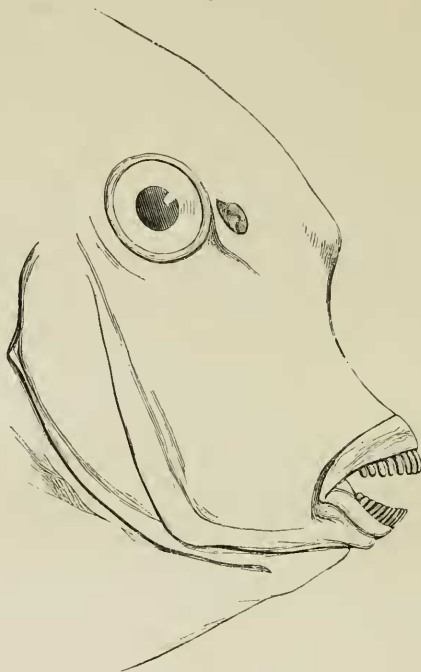
## ACRONURIDÆ.

## 93. ACANTHURUS TRIOSTEGUS, L.

## 94. A. MATOIDES, C. &amp; V. (Fig. 1.)

A remarkable specimen of this fish was obtained at Seychelles, with a very protruding profile, approaching that of *Naseus*; in other respects it is identical with the specimens formerly observed on the east coast of Africa.

Fig. 1.

*Acanthurus matoides.*

## 95. A. VELIFER, Bl.

## 96. NASEUS BREVIROSTRIS, C. &amp; V.

## CARANGIDÆ.

## 97. CARANX CRUMENOPHTHALMUS.

*Scomber crumenophthalmus*, Bl. t. 343.

*Caranx crumenophthalmus*, Cuv. & Val. ix. p. 62 ; Günth. Fish. ii. p. 429.

*C. plumieri*, Cuv. & Val. ix. p. 65.

*C. mauritanus*, Quoy & Gaim. Voy. Freyc. Zool. p. 359.

*C. macrophthalmus*, Rüpp. Atlas, Fische, p. 97, t. 25. f. 4.

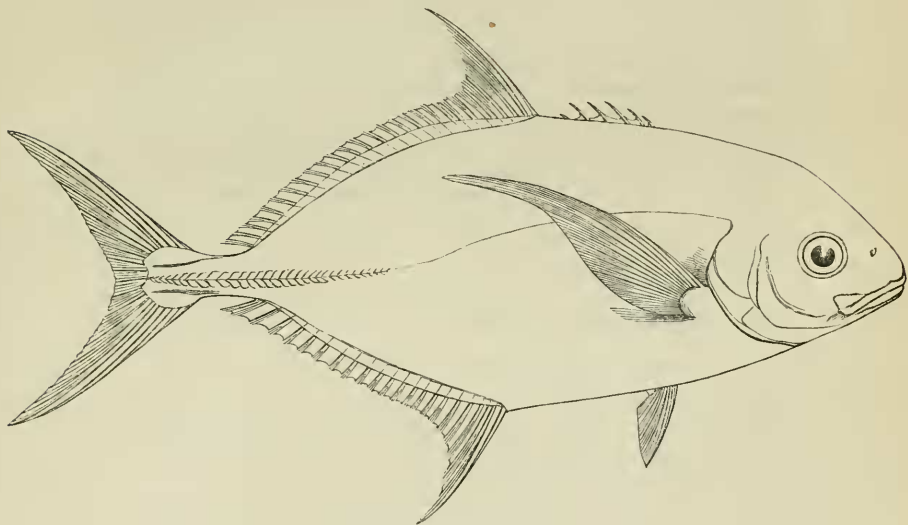
*Hab.* Seychelles; Mauritius; Red Sea; Indian Ocean; Polynesia; west coast of Africa; Atlantic coasts of Tropical America.

98. *CARANX VENATOR*, sp. n. (Fig. 2.)

D.  $7\frac{1}{27-29}$ . A.  $0-1\frac{1}{21-24}$ . L. lat. 39.

*Diagnosis.*—First dorsal little developed, the spines feeble and hardly connected together by membranes. Anal with sometimes one, generally no free spine. Teeth in both jaws in a single series without canines; teeth on vomer, palatine bones, and tongue. Height of body contained thrice and a third in the total length; length of head four times and three-quarters in the same. Breast naked. Lateral line slightly bent, becoming straight in the vertical from middle of soft dorsal. Plates strong, occupying nearly the whole of the straight portion. Snout subtruncated, lower jaw not prominent. Maxillary reaches the vertical from anterior margin of orbit.

Fig. 2.



*Caranx venator.*

*Colour.*—White, bluish above, with a few small yellow spots scattered over the body. No opercular spot. Posterior margin of caudal blackish. During life there are several broad transverse bands on the side, as in *C. speciosus*; but these invariably disappear after death.

*Description of specimen.*—Body compressed, elliptical; the upper profile of the head much more curved than the lower one (in which respect it differs from *C. helvolus*). The greatest depth is between the origin of the soft dorsal and anal fins, where it is contained thrice

and a third in the total length. Head longer than high, its length contained four times and three-quarters in the same. Eye moderately large, its diameter contained once and a half in the length of the snout, which is obtuse. Lower jaw not prominent; cleft of mouth slightly oblique, low down in snout. Maxillary reaches to, or slightly beyond, the vertical from front margin of orbit. The interorbital space is equal to the length of the snout. Diameter of the eye contained four times and a half in the length of the head; no adipose eyelid. Teeth in both jaws in a single series, without canines; those on the vomer in a rather large tetrahedral patch, those on the palatines and tongue in elongated bands.

The first dorsal is little developed, the spines feeble, and hardly connected together by membranes; its origin is nearer to the roots than to the points of the ventral fins. The origin of the second dorsal is nearer to the snout than to the fork of caudal; its anterior rays, as well as those of anal, produced (in this also it differs from *C. helvolus*). Caudal deeply forked; the lobes are equal, their length contained four times and a half in the total length; a keel on each side of its base. Soft anal similar to soft dorsal. Ventrals inserted behind the pectorals, and reaching a little beyond vent; their length is contained thrice and a half in that of the pectorals, which are long, falciform, and extend to the seventeenth dorsal ray.

Scales small, breast naked. Lateral line slightly arched, becoming straight below the sixteenth dorsal ray; the straight portion is armed with about thirty-nine spiniferous plates, those on the free portion of the tail being very strong and well developed.

Length 16 inches. Creole name "Carangue chasseur."

99. *CARANX HASSELTII*, Blkr.

100. *C. XANTHURUS*, K. & v. II.

101. *C. VOMERINUS*, Playf.

102. *C. MALABARICUS*, Schn.

103. *C. BAJAD*, Forsk.

104. *C. FULVOGUTTATUS*, Forsk.

105. *C. SPECIOSUS*, Forsk.

106. *C. RÜPPELLII*, Gthr.

107. *C. MELAMPYGUS*, C. & V.

108. *C. SANSUN*.

*Scomber sansun*, Forsk. p. 56; Russell, ii. p. 33, pl. 144.

*Caranx sansun*, Rüpp. Atlas, Fische, p. 101; N. W. Fische, p. 48, t. 13. f. 3; Günth. Fish. ii. p. 447.

*Hab.* Seychelles; Mauritius; Red Sea; coast of India.

109. *C. ARMATUS*, Forsk.



## 110. SERIOLICHTHYS BIPINNULATUS, Q. &amp; G.

## 111. CHORINEMUS TOLOO.

*Toloo-parah*, Russell, ii. p. 29, pl. 137.

*Lichia tolooo-parah*, Rüpp. Atlas, Fische, p. 91.

*Chorinemus tolooo*, Cuv. & Val. viii. p. 377; Günth. Fish. ii. p. 473.

*Hab.* Seychelles; Red Sea to Indian Ocean.

## 112. TRACHYNOTUS OVATUS, L.

## 113. T. BAILLONII, Lacép.

## 114. PLATAX VESPERTILIO, Bl.

## 115. P. TEIRA, Forsk.

## 116. P. ORBICULARIS.

*Chaetodon orbicularis*, Forsk. p. 59.

*C. pentacanthus*, Lacép. iv. p. 454, pl. 9. f. 2.

*Platax orbicularis*, Cuv. & Val. vii. p. 232; Rüpp. Atlas, Fische, p. 67, t. 18. f. 3; Günth. Fish. ii. p. 490.

*P. pentacanthus*, Cuv. & Val. vii. p. 235.

Creole name of all the species of *Platax* "Poule d'or."

*Hab.* Seychelles; Red Sea; East-Indian archipelago; north-west coast of Australia.

## 117. EQUULA FASCIATA.

*Equula fasciata*, Russell, i. p. 51, pl. 66.

*Clupea fasciata*, Lacép. v. p. 463.

*Equula filigera*, *longispinis*, *carak*, et *fasciata*, Cuv. & Val. x. pp. 92-97, pl. 84.

*E. fasciata*, Günth. Fish. ii. p. 498.

*Hab.* Seychelles; Red Sea; Indian Ocean and Archipelago.

## 118. GAZZA MINUTA, Bl.

## CORYPHÆNIDÆ.

## 119. CORYPHÆNA HIPPURUS, L.

## SCOMBRIDÆ.

## 120. SCOMBER MICROLEPIDOTUS, Rüpp.

## 121. THYNNUS THUNNINA, C. &amp; V.

## 122. ECHENEIS NAUCRATES, L.

## TRACHINIDÆ.

## 123. SILLAGO SIHAMA, Forsk.

## PEDICULATI.

## 124. ANTENNARIUS MARMORATUS, Gthr.

## 125. A. MULTIOCELLATUS.

*Chironectes multiocellatus*, Cuv. & Val. xii. p. 420.

*Antennarius leucosoma*, Bleek. Nat. Tydschr. Ned. Ind. 1854, Floris, p. 328.

*Chironectes leprosus*, Eyd. & Soul. Voy. Bonite, Zool. i. p. 187.

*Antennarius multiocellatus*, Günth. Fish. iii. p. 194.

Var. *a*. D. 3 | 13. A. 7. P. 10.

*Colour*.—Blackish, marbled with lighter and with red; the upper part of the body with numerous large black ocelli, the lower part thickly covered with small black spots. Four large black ocelli along the edge of the soft dorsal, two on anal, and four on caudal.

Length 5 inches.

Var. *b*. D. 3 | 12. A. 6. P. 10.

*Colour*.—Whitish, dotted all over with blackish, especially on the belly; three or four large spots on the sides, one at the base of the third dorsal spine, three along the margin, and two along the base of anal, and three arranged as a triangle on the caudal.

Length 4 inches.

*Hab*. Seychelles; Caribbean Seas; East-Indian archipelago; Sandwich Islands.

## GOBIIDÆ.

## 126. GOBIOUS ORNATUS.

*Gobius ornatus*, Rüpp. Atlas, Fische, p. 135; N.W. Fische, p. 137; Günth. Fish. iii. p. 21.

*G. ventralis* (Ehrenb.), Cuv. & Val. xii. p. 113.

*G. interstinctus*, Richards. Voy. Ereb. & Terr. Fish. p. 3, pl. 5. f. 3-6.

*Hab*. Seychelles; Red Sea; East-Indian archipelago; Philippine Islands; north-west coast of Australia.

## 127. G. CANINUS, C. &amp; V.

## 128. PERIOPHTHALMUS KOELREUTERI, C. &amp; V.

## 129. ELEOTRIS OPHIOCEPHALUS, K. &amp; v. H.

## 130. E. FUSCA, Schm.

## 131. E. SOARESII, Playf.

## 132. E. CYANOSTIGMA.

? *Eleotris cyanostigma*, Bleek. Natur. Tydschr. Nederl. Ind. 1855, Kokos, iv. p. 452; Günth. Fish. iii. p. 119.

? *Eleotriodes cyanostigma*, Bleek. Enum. Sp. p. 112.

D.  $6\frac{1}{10}$ . A.  $\frac{1}{9}$ . L. lat. 26-28.

*Diagnosis*.—The third dorsal spine produced into a filament. Nine series of scales between the root of posterior dorsal and anal.

Head scaly, with the exception of the snout. Body compressed. Height of body equal to length of head, and a quarter of the total length. Eyes close together, the diameter of one of them being longer than the snout, and one-third of the length of the head. Jaws equal; the maxillary hardly extends beyond the anterior margin of the eye. Teeth in villiform bands, those in the outer series being enlarged. No canines in the lower jaw. Scales ctenoid.

*Colour*.—Greenish, marbled and spotted with darker and lighter, each scale with a silvery dot. Vertical fins brownish; the second dorsal, anal, and caudal with silvery spots.

Length  $1\frac{1}{2}$  inch.

*Hab.* Seychelles; East-Indian archipelago.

#### BLENNIIDÆ.

133. *SALARIAS VERMICULATUS*, C. & V.

134. *S. FASCIATUS*, Bl.

#### SPHYRÆNIDÆ.

135. *SPHYRÆNA JELLO*, Russ.

136. *S. COMMERSIONII*.

*S. commersonii*, Cuv. & Val. iii. p. 352; Günth. Fish. ii. p. 338.

*Hab.* Seychelles; Mauritius; East-Indian Ocean.

#### ATHERINIDÆ.

137. *ATHERINA PINGUIS*.

*Atherina pinguis*, Lacép. v. p. 372, pl. 11. f. 1; Bleek. Act. Soc. Sc. Indo-Neerl. viii. Sumatra, viii. p. 24; Günth. Fish. iii. p. 399.

*A. affinis*, Benn. Proc. Comm. Zool. Soc. i. 1831, p. 166.

*A. pectoralis*, Cuv. & Val. x. p. 447.

*Hab.* Seychelles; east coast of Africa; Bombay; coast of Australia.

138. *A. AFRA*.

*A. afra*, Peters in Wieg. Arch. 1855, p. 244; Günth. Fish. iii. p. 378.

*Hab.* Seychelles; Mozambique.

#### MUGILIDÆ.

139. *MUGIL AXILLARIS*.

? *Mugil axillaris*, Cuv. & Val. xi. p. 131.

*Mugil axillaris*, Bleek. Natur. Tydsch. Ned. Ind. iv. 1853, p. 266; Act. Soc. Sc. Indo-Neerl. viii. Sumatra, ix. p. 3; Günth. Fish. iii. p. 444.

*M. parsia*, Bleek. Natur. Tydsch. Ned. Ind. iii. 1852, p. 166.

*Hab.* Seychelles; Mauritius; East-Indian archipelago.

140. *M. CÆRULEO-MACULATUS*, Lacép.

141. *M. TROSCHELII*.

*M. troschelii*, Bleek. Nat. Tydschr. Ned. Ind. xvi. p. 277; Act. Soc. Sc. Indo-Neerl. vi. Sumatra, viii. p. 80; Günth. Fish. iii. p. 448.  
*Hab.* Seychelles; Ceylon; East-Indian archipelago.

#### FISTULARIIDÆ.

142. *FISTULARIA SERRATA*, Bl.

#### CENTRISCIDÆ.

143. *AMPHISILE PUNCTULATA*, Bianc.

#### LABYRINTHICI.

144. *OSPHROMENUS OLFA*, Commers.

### PHARYNGOGNATHI.

#### POMACENTRIDÆ.

145. *POMACENTRUS BANKANENSIS*, Blkr.

146. *GLYPHIDODON CÆLESTINUS*, Soland.

147. *G. SEPTEMFASCIATUS*.

*G. septemfasciatus*, Cuv. & Val. v. p. 463; Günth. Fish. iv. p. 40.

The specimens obtained at Seychelles do not materially differ from those previously described, except in the great width of the inter-orbital space, which is once and a half the diameter of the eye. Length 8 inches.

148. *G. SORDIDUS*, Forsk.

149. *HELIASTES CINCTUS*, sp. n.

D.  $\frac{13}{13}$ . A.  $\frac{2}{13}$ . L. lat. 29. L. transv.  $\frac{2}{8}$ .

*Diagnosis*.—Height of body contained twice and a half in the total length, or twice in that without caudal; the length of the head is contained four times and two-thirds in the former, or thrice and three-fifths in the latter. Teeth in the jaws in a single series, with an outer series of larger ones in the front of the lower jaw. Width of præorbital more than half the diameter of the eye. Breadth of interorbital space equal to the diameter of the orbit. Posterior limb of præoperculum straight, not emarginate; the cheek-scales are in three series, and do not cover the præopercular margin. Præorbital naked. Spines of dorsal slender, the middle being slightly longer than the posterior ones; they decrease gradually in length from the seventh to the first; the soft portion is higher than long; one of the longest rays is more than once and two-thirds the length of the longest spine.

Caudal forked, with the lobes rounded. Second anal spine longer than any of the dorsal.

*Colour*.—Dark violet, with a yellowish transverse band crossing the body below the fifth and sixth dorsal spines, its breadth is equal to that of two lateral series of scales; in immature specimens (1 inch long) it crosses the entire body; in adults (3·9 inches) it extends over the upper two-thirds of its height. Dorsal fin yellowish, with a black margin; a black white-edged ocellus on the base posteriorly, extending on to the top of the tail; and in immature specimens a large similarly coloured ocellus on the last spines, extending slightly on the body. Caudal yellowish, with a brighter cross band near the base. Anal and ventrals blackish. Pectorals yellow, with a small spot on axil.

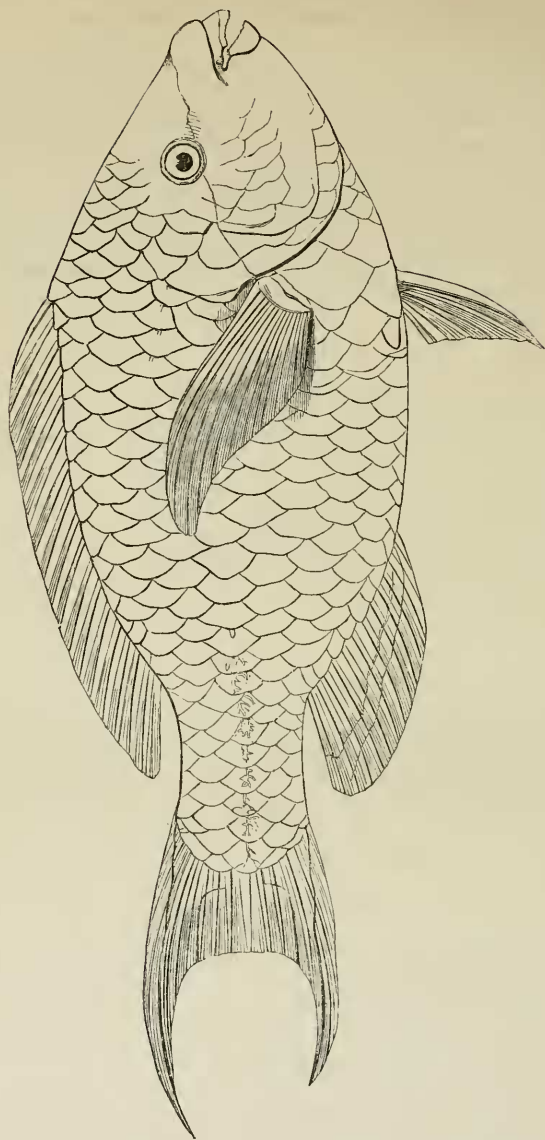
#### LABRIDÆ.

150. CHEILINUS TRILOBATUS, Lacép.
  151. C. PUNCTATUS, Benn.
  152. C. FASCIATUS, Bl.
  153. EPIBULUS INSIDIATOR, Pall.
  154. STETHOJULIS STRIGIVENTER, Benn.
  155. JULIS LUNARIS, L.
  156. J. TRILOBATA, Lacép.
  157. CORIS CUVIERI, Benn.
  158. C. FORMOSA, Benn.
  159. C. ANNULATA, Lacép.
  160. SCARICHTHYS AURITUS, K. & v. H.
  161. S. CÆRULEOPUNCTATUS, Rüpp.
  162. CALLYODON VIRIDESCENS, Rüpp.
  163. PSEUDOSCARUS HARID, Forsk.
  164. P. MACULOSUS, Lacép.
  165. P. DUSSUMIERI, C. & V.
  166. P. NUCHIPUNCTATUS, C. & V.
  167. P. CYANOGNATHUS, Blkr.
  168. P. FALCIPINNIS, sp. n. (Fig. 3, p. 866.)
- D.  $\frac{9}{10}$ . A.  $\frac{3}{9}$ . P. 14.

Closely allied to *P. janthochir*, but differing from it in coloration and in the shape of the pectoral fin, which, in this species, is falc-



Fig. 3.

*Pseudoscarus falcipinnis.*

form, with the point rounded, and unusually long, reaching to the origin of the anal.

*Diagnosis.*—Jaws green, rather strong, with a posterior conical tooth in the upper jaw. Lips broad, covering more than half of the

upper jaw. Forehead straight. Two series of scales on the cheek, with a single one below, the lower præopercular limb being entirely naked. Caudal with the lobes much produced. Pectorals long, reaching to anal, falciform, with the point rounded.

*Colour*.—General colour of the body dirty green, each scale with a brownish margin. A broad green patch on the head below the eye, continued as a band across the snout, above the upper lip and below the lower one, leaving the lips and an irregular spot on each side of the symphysis of the lower jaw of a dirty fawn-colour; it is also continued as a patch on the body, between the roots of the pectorals and ventrals, and as a series of spots from the latter to the origin of the anal. Dorsal blue, with vertical yellowish bars on the membranes. Anal bluish green, with a narrow, wavy, yellowish median band. Caudal green, with a broad yellowish band along each lobe. Ventrals with a similar band parallel to the first ray.

Length 19 inches.

169. *GERRES LINEOLATUS*, Gthr.

170. *G. ARGYREUS*, Forst.

*Sciæna argyrea*, Forster.

*Gerres waigiensis*, Quoy & Gaim. Voy. Freyc. Zool. p. 292.

*G. argyreus*, Cuv. & Val. vi. p. 478; Günth. Fish. iv. p. 263.

The specimens from Seychelles have the second dorsal spine two-thirds of the height of the body. Creole name "Beau temps."

*Hab.* Seychelles; Mozambique; Red Sea; East-Indian archipelago; Port Jackson.

171. *G. POETI*, C. & V.

#### PLEURONECTIDÆ.

172. *RHOMBOIDICHTHYS PANTHERINUS*, Rüpp.

173. *PLAGUSIA MARMORATA*, Blkr.

#### PHYSOSTOMI.

##### SILURIDÆ.

174. *PLOTOSUS ANGUILLARIS*, Bl.

#### SCOMBERESOCIDÆ.

175. *BELONE ANNULATA*.

*Belone annulata*, Russell, pl. 175; Cuv. & Val. xviii. p. 447, pl. 550; Cant. Mal. Fish. p. 244; Günth. Fish. vi. p. 240.

*Hab.* Seychelles; Indian Ocean; Friendly Islands.

176. *HEMIRAMPHUS DUSSUMIERI*, C. & V.

177. *H. GEORGII*, C. & V.

178. *H. DISPAR.*

*H. dispar*, Cuv. & Val. xix. p. 58, pl. 558; Bleek. Natur. Tydsch. Ned. Ind. vi. p. 498; Günth. Fish. vi. p. 274.

*Zenarchopterus dispar*, Bleek. Nat. Tydsch. Ned. Ind. iii. p. 164. Creole name "Aiguille."

*Hab.* Fresh waters of Seychelles; East Indies.

179. *EXOCETUS EVOLANS*, L.180. *E. SOLANDRI*, C. & V.181. *E. AFFINIS.*

*E. affinis*, Günth. Fish. vi. p. 288.

*Hab.* East coast of Africa, between Cape Guardafui and Seychelles; Atlantic.

## CYPRINODONTIDÆ.

182. *HAPLOCHILUS PLAYFAIRII*, Gthr.

## CLUPEOSOCIDÆ.

183. *BUTYRINUS GLOSSODONTIS*, Forsk.

## GONORHYNCHIDÆ.

184. *LUTODEIRA CHANOS*, Forsk.185. *L. CHLOROPTERUS.*

*L. chloropterus*, Russell, pl.

*Chanos chloropterus*, Cuv. & Val. xix. p. 195.

Russell states that this fish is found only in water entirely fresh, and never in that which is even brackish. Valenciennes observes, "Cette observation se rapporte à celle faite aux Séchelles sur une autre espèce donnée par M. Dussumier."

I have observed two species of this genus in considerable numbers at Seychelles, but never in fresh water. They are generally captured in drawing the seine on the sandy beaches of the various islands, and sometimes in bays which receive the small mountain-streams, which are the only fresh water found there.

## CLUPEIDÆ.

186. *ALOSA VENENOSA*, C. & V.187. *ENGRAULIS BOELAMA*, Forsk.

## ANGUILLIDÆ.

188. *ANGUILLA AMBLODON*, Gthr.

## MURÆNIDÆ.

189. *MURÆNA CHLOROSTIGMA*, Kp.190. *M. NUBILA*, Richards.

191. *M. VARIEGATA.*

*M. variegata*, Forster, Des. An. p. 181 ; Rich. Zool. Ereb. & Terr. Fish. p. 94, t. 47. f. 11-16.

*M. ophis*, Rüpp. Atlas, Fische, p. 116, t. 29. f. 2.

*Pæcilophis variegata*, Kaup, Cat. Ap. Fish. p. 98, t. 13. f. 6, 7.

*Echidna variegata*, Bleek. Atl. Ichth. Muræn. p. 80, t. 168. f. 2.

*Hab.* Seychelles ; Indian Ocean.

## PLECTOGNATHI.

## OSTRACIONIDÆ.

192. *OSTRACION ARCUS*, Schn.

## GYMNODONTIDÆ.

193. *DIODON RETICULATUS*, Will.194. *TETRODON ARGENTEUS*, Lacép.195. *T. LATERNA*, Richards.196. *T. STELLATUS*, Lacép.197. *T. IMMACULATUS*, Lacép.

## BALISTIDÆ.

198. *BALISTES NIGER*, Osbeck.199. *ALEUTERES SCRIPTUS*, Osbeck.

## LOPHOBRANCHII.

200. *SYNGNATHUS FASCIATUS*, Gray.201. *S. BIACULEATUS*, Bl.

## CHONDROPTERYGII.

202. *CARCHARIUS ACUTUS.*

*Carcharius acutus*, Rüpp. N. W. Fische, p. 65, pl. 18. f. 4 ; Müll. & Henle, Plag. p. 29 ; Cant. Mal. Fish. p. 399 ; Dum. Hist. Poiss. i. p. 345.

Snout pointed, the distance between its extremity and the nostrils equals two-thirds of the distance of the latter from the angles of the mouth. The first dorsal nearer to the pectorals than to the ventrals ; the posterior edge of the former emarginate, their breadth is two-thirds of their length. Base of anal about once and a half the length of that of second dorsal. Distance between caudal and anal double the length of the base of the latter. Caudal low, the superior lobe very obliquely cut at the free extremity, which has a cutaneous fold.—*A. Dum.*

Creole name "Requin."

*Hab.* Seychelles ; Indian Ocean ; China ; Brazil.

203. *CARCHARIUS BLEEKERI*.

*Carcharius (Prionodon) bleekeri*, Dum. Hist. Poiss. i. p. 367.

Præocular portion of snout a little less than the width of the interocular space. Nostrils equidistant between the point of the snout and the anterior of the mouth. Teeth different in each jaw; those in the upper jaw are oblique, with a reentering angle on the exterior side, and are denticulated both on the point and base; those in the lower jaw are straighter and more finely denticulated. The first dorsal commences a short distance behind the interior angle of pectorals, and is more than four times as high as the second, which is situated immediately above the anal, and, like it, has the posterior angle much prolonged. Caudal one-fourth of the total length; its upper lobe is twice the length of the lower one. The extremity of the pectorals, particularly underneath, the superior angle of the second dorsal, but not the first, and the angle of the inferior lobe of caudal are marked with deep black.—*A. Dum.*

Length 3' 10".

*Hab.* Seychelles; Pondicherry.

Two typical specimens of this species exist in the Paris Museum; length respectively 1<sup>m</sup>·31 and 0<sup>m</sup>·78.

204. *ZYGÆNA MALLEUS*, Shaw.

Creole name "Marteau."

205. *TRIENODON OBESUS*.

*Squalus obesus*, Rüpp. N. W. Fische, p. 64, pl. 18. f. 2.

*Trienodon obesus*, Müll. & Henle, Plag. p. 55, pl. 20; Dum. Hist. Poiss. i. p. 386.

Snout short, rounded. Nostrils equidistant between the anterior edge of the mouth, which is broader than high, and the extremity of the snout. They have a transverse valvule, small, and without cirrhus. Teeth with an elongated median point, and with one or two toothlets on each side of the base; some have a double toothlet on the inner side. First dorsal nearer the ventrals than the pectorals. Anal opposite, and nearly equal to the second dorsal. A semicircular groove at the top of the root of the caudal. Lower caudal lobe about half as long as the upper.

General colour grey; the superior angle of both dorsals and the points of both caudal lobes of a milky white.—*A. Dum.*

Creole name "L'endormi."

*Hab.* Seychelles; Red Sea.

206. *GALEOCERDO TIGRINUS*.

*Galeocerdo tigrinus*, Müll. & Henle, Plag. p. 59, pl. 23; Dum. Hist. Poiss. i. p. 393.

Snout flat, rounded, and rather short. Nostrils lateral, equidistant between the extremity of the snout and the anterior of the mouth. Circular spout-holes behind the eyes. Median tooth of



both jaws smooth at the point, denticulated at the base; the others strongly denticulated along the entire edge. First dorsal much nearer the pectorals than the ventrals; the base of the second once and a half as long as that of the anal. Lower caudal lobe short, hardly a third of the length of the upper one.

Colour yellowish grey, darker superiorly, marked with spots and vertical bands of a darker colour on the back, sides, and tail; on the last they are rounded.—*A. Dum.*

Creole name "Damoiselle."

*Hab.* Seychelles; Indian Ocean.

## 207. RHYNCHOBATUS LÆVIS.

*Raja djeddensis*, Forsk. p. 18. no. 17.

*Rhinobatus lævis*, Bl. Schn. p. 354, pl. 71; Russell, pl. 10.

*R. djeddensis*, Rüpp. Atlas, Fische, p. 54, t. 14. f. 1.

*Rhynchobatus lævis*, Müll. & Henle, Plag. p. 111; Dum. Hist. Poiss. i. p. 433.

Snout long, pointed. Nostril very oblique, the interior angle almost reaching the anterior margin of mouth; their length is one-fourth more than the space between them, and three times that between their external angle and the edge of the disk. The pectorals have their exterior angles almost right ones. The superior lobe of the caudal is a third longer than the inferior one.

The colour varies with age. Young examples have a yellowish-olive ground and a small brown spot on each side of the end of the snout; a band of the same colour on the edge of the eyelid; a large brown spot surrounded with small ones on the root of each pectoral; white spots on the rest of the body, those on the flanks being sometimes disposed in bands. In mature specimens these markings disappear, and the fish assumes a uniform brown colour.—*A. Dum.*

Creole name "Violon."

*Hab.* Seychelles; Red Sea; Indian Ocean.

## 208. UROGYMNUS ASPERRIMUS.

*Raja asperrima*, Bl. Schn. p. 367. no. 24.

*Urogymnus asperrimus*, Müll. & Henle, Wieg. Arch. 1837, p. 400, 434; Dum. Hist. Poiss. i. p. 580.

*Anacanthus asperrimus*, Müll. & Henle, Plag. p. 157, pl. 60.

Disk ovate, rhomboidal, almost as broad as long, the exterior and posterior angles rounded. Snout slightly prominent; its length in front of eyes is equal to the interorbital space. Tail hardly longer than the disk, having a groove on its lower side containing a cutaneous fold.

The middle of the upper surface from the interorbital space to the tail, and for more than one-third of its breadth, covered with a mosaic of tubercles closely set together, between which rise here and there spines with stellated bases, the branches of which, frequently divided, surround several of the adjacent tubercles. On the remainder of the disk there are scattered pointed tubercles, often as

large as the others, but with a circular or oval base. Underside smooth.

Colour above yellowish green; below white.—*A. Dum.*

*Hab.* Seychelles; Indian Ocean.

#### 209. TRYGON UARNAK, Forsk.

The specimen obtained at Seychelles differed only from that found at Zanzibar in having much smaller tubercles on the median region of the back, and in having the upper surface immaculate.

#### 210. HYPOLOPHUS SEPHEN.

*Raja sephen*, Forsk. p. 17; Russell, i. p. 2, pl. 3.

*Trygon sephen*, Rüpp. Atlas, Fische, p. 52.

*T. forskalii*, Rüpp. ib. p. 53, pl. 13. f. 2.

*Hypolophus sephen*, Müll. & Henle, Plag. p. 170; Dum. Hist. Poiss. i. p. 616.

Disk rhomboidal, broader than long, the edge almost straight or slightly convex; angles rounded, except the anterior, which is very obtuse. Ventrals united on the median line; the anterior angle rounded, the exterior one sharp. Tail about twice and a half as long as disk, depressed as far as the spine, below which commences a cutaneous fold, which occupies about a third of the lower edge. Superior median region from head to tail covered with scales closely placed together. On the middle of the scapular region there are three tubercles much larger than the others.

Colour above of a reddish brown, except the scaly portion, which is leaden grey. Lower parts light; caudal fin dark.—*A. Dum.*

*Hab.* Seychelles; Red Sea; Indian Ocean.

#### 211. ÆTOBATIS NARINARI.

*Narinari brasiliensibus*, Marcgrav, Hist. ver. Natur. Brasil. in Piso Hist. Nat. Brasil. pp. 175, 176.

*Raja quinqueaculeata*, Quoy & Gaim. Voy. Freyc. p. 200, pl. 43. f. 3.

*Eel tenkee*, Russell, i. pl. 18.

*Myobatis celtenkee*, Rüpp. N. W. Fische, p. 70, pl. 19. f. 3 (teeth)

*Stoasodon narinari*, Cant. Mal. Fish. p. 1416.

*Ætobatis narinari*, Müll. & Henle, Plag. p. 179; Dum. Hist. Poiss. i. p. 641.

Disk twice as broad as long, the anterior edges a little convex, the posterior ones concave. Anterior angle pointed, posterior one rounded. Snout with an obtuse prominence, broader than long. Lobes of nasal valvule broad, rounded and toothed on their free edges. Dental plate on lower jaw curved, prominent. Caudal fin commencing on the level of the extremity of the insertion of the ventrals. Tail three or four times the length of disk.

Colour brown, with round white spots edged with black distributed irregularly over the back. Lower side white.

*Hab.* Seychelles; Brazil; Red Sea; Indian Ocean.

7. Note on the *Nymphalis caledonia* of Hewitson.

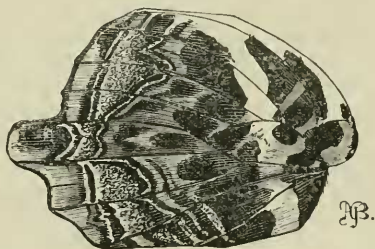
By ARTHUR G. BUTLER, F.Z.S.

In the first part of his 'Exotic Butterflies' (p. 86, pl. 43. f. 3, 4) Mr. Hewitson has described and figured a new Butterfly under the name of *Nymphalis caledonia* (incorrectly printed *calydonia*). It is one of the most beautiful of the species of *Nymphalidae*, and has until quite recently been unique in the collection of Mr. A. R. Wallace.

Mr. Hewitson says of this insect, "This glorious butterfly is beyond description. Both of the posterior wings are so much injured that I have had to imagine part of the outer margin, but have little doubt that, if we ever have the good fortune to see a perfect example, it will prove to be of nearly the same form as *N. berenice* of Drury."

As it has fallen to my lot to see the second specimen of this beautiful species in the collection of Lieutenant H. Roberts, I have asked his permission to figure the hind wing; he has kindly conceded to my wishes, and I am thus enabled to give a correct drawing of the outline\*.

The hind wings of *N. caledonia* are certainly somewhat similar to those of the female of *N. berenice*; they, however, more nearly resemble those of *Prothoë francki* (*Nymphalis franck* of Godart): moreover the markings and general colouring of the underside appear to be a modification of the markings and colouring of that species; therefore, though *N. berenice* and *N. caledonia* have hitherto been looked upon as species of *Charaxes* (*Nymphalis* of Westwood), and are as such included in my monograph of that genus†, I should recommend that they be henceforth referred to the genus *Prothoë*, the great size of the thorax being the only character that I can discover to warrant their admission into the genus *Charaxes*.

Hind wing of *Nymphalis caledonia*.

The synonymy of *N. caledonia* must therefore stand as follows:—

*PROTHOË CALEDONIA*.

*Nymphalis calydonia* (misprint), Hewitson, Exot. Butterf. i. p. 86, pl. 43. f. 3, 4 (1855).

\* Since writing the above a third specimen has arrived from Labuan (Borneo). It is now in the collection of Mr. Hewitson.

† P. Z. S. 1865, pp. 637, 638.

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*Charaxes calydonia*, Butler, P. Z. S. 1865, p. 638.

*Hab.* Malacca (*Colls. Wallace, Roberts, and Hewitson*).

The specimen of this butterfly lent to me by Mr. Roberts differs from that figured by Mr. Hewitson in its greater size, and in having the upperside of the hind wing more suffused with greenish: on the underside the markings are slightly different, the basal red bands being broader, the central band whiter, the discal red band narrower, darker, and rather more irregular, the submarginal green band duller, and the blue lunulate line more irregular and not so deeply margined with black; the large black caudal spot is, of course, wanting in the original figure.

8. Additional Observations on the Species of Cats (*Felidæ*)  
in the British Museum. By Dr. J. E. GRAY, F.R.S.,  
V.P.Z.S., F.L.S., &c.

The following memoranda were accidentally omitted from my former paper on the Cats in the British Museum (see P. Z. S. 1867, p. 258).

To the species of the restricted genus *Felis* mentioned in the former paper I may add the Manul (*Felis manul* of Pallas). This was regarded as a new species by Mr. Hodgson under the name of *Felis nigropectus*, and is beautifully illustrated in the drawing of his Nepalese animal in the British Museum. In the British Museum also is a fine specimen of this Cat, presented by Mr. Hodgson, under the latter name. It has many characters in common with the other wild species of the restricted genus *Felis*; but it is at once known by its very long, soft hair, the pale whitish colour only varied by a slight black wash on the upper part of the legs and the black on the chest. Fischer, who only worked from books, considers it a variety of *Felis domestica*; but it is a very distinct and well-marked species.

The Wild Cat of Europe (*Felis catus*) is distinct from the African and Asiatic species of the restricted genus *Felis* in the British Museum. It is at once known by its thick cylindrical truncated tail; but it is so well known, and has been so often described, that I need not add any further observations respecting it. It is said that it breeds with the domestic Cat, and that the skull of the hybrid, as well as the coloration of the fur, is more or less modified by the interbreeding.

Having confidence in the declaration of M. F. Cuvier, that the skins he had received from Malabar were exactly like those of the animal named by M. Geoffroy in the Museum Catalogue *F. chaus* which came from Egypt, and with those that M. F. Cuvier figured and described under the same name that were received from North Africa, and also in Mr. Edward Blyth's observation (see P. Z. S. 1863, p. 181), that "the Egyptian specimen (of *F. chaus*) now living in the Society's Gardens is absolutely similar to the common animal of Bengal," I was misled and adopted their conclusion.

These authors must have examined their specimens very cursorily, and cannot have paid any attention to the length of the tail and the distribution of the bands when present. It will be seen by my preceding observations, founded on the examination of the specimens in the British Museum received from all parts of Africa—from Tunis and Egypt in the north, Abyssinia in the east, and the Cape of Good Hope in the south, that these Cats are all of one species, and of a species easily distinguished from the *Chaus* of Asia by the greater length and development of the tail.

Of the genus *Chaus* (as defined by the shortness of the tail), which appears to be confined to Asia, there are what I am inclined to regard as three distinct species in the Museum Collection.

The largest species is the animal that I figured in the 'Illustrations of Indian Zoology' under the name of *Felis affinis*, having convinced myself that it was a distinct species years ago, when I was studying the animals of India from the Hardwicke Collection of Drawings. I have little doubt that this is the Cat described and figured by Pallas in the 'Zoographia Rosso-Asiatica,' t. 2, under the name of *Felis catolynx*. It is certainly the *Lyncus erythrotis* of Hodgson, whose drawings for his 'Nepal Fauna' contain several good figures of it. It may be the *Felis kutas* of Pearson. It inhabits, according to Mr. Hodgson, the central and lower regions of Nepal. There is a well-stuffed adult specimen of this Cat in the British Museum; it is a magnificent animal.

It is known by the bright yellow colour of the fur, without any, or with only very indistinct, indications of darker streaks across the body, which, when present, are only to be seen when the body is looked at at certain angles.

Güldenstädt's (Nov. Comm. Acad. Petrop. xx. p. 483, t. 14) description and figure of the *Felis chaus* from the shores of the Caspian agree with this animal in most particulars, and represent the short tail of the genus *Chaus*, the tail being rather more than one-fourth of the entire length of the body, or one-third of the length of the body and head (30 + 11). The fur is described as "fusco-lutescens, gulæ et regionis umbilicalis albidus; pectoris et abdominis dilute rufescens." In the figure the under part is represented as much paler than this description justifies, or than may have been intended. Otherwise it is a good representative of the Nepal animal. I have not seen any specimen from the Caspian. The red ear is common to the Nepal *F. affinis* and most specimens of *F. caligata* from Africa.

In the British Museum there are two small specimens of the genus *Chaus* with short tails from India which have more distinct dark bands across their body and legs, and which are without doubt the Cats that MM. F. Cuvier and Blyth have confounded with the longer-tailed *Felis maniculata* of Africa.

This Cat was figured, from a specimen then alive in Exeter Change, under the name of the Bangalore Cat (*F. chaus*), in my 'Spicilegia Zoologica,' t. 2. f. 1. It is probably the *Felis jacquemonti* of M. Isidore Geoffroy, in the 'Zoology to Jacquemont's Voyage,' the skull of which is figured t. 3. f. 1. Unfortunately the specimens in the



Museum are few in number, and not in a very perfect state; but I can scarcely think that this Cat can be the young state of *Felis affinis* from Nepal. It is doubtless the Cat that Mr. Blyth confounds with the Egyptian Cat (*F. chaus*, Geoff.), stating that it is "the common animal of Bengal" (see P. Z. S. 1863, p. 186), and that, as in the case of many common animals, its skins are rarely brought to Europe. It seems spread over various parts of India, as the specimens in the British Museum were sent from the Matoralla territory by Sir Walter Elliot, and from Gangootra.

The third species of *Chaus* in the British Museum is the beautiful animal that I figured in the 'Illustrations of Indian Zoology' as *Felis ornata*. The small specimen of the species in the British Museum is not in a very good state. *Chaus ornatus* is of a pale, more or less bright, yellow-brown colour, with transverse bands of nearly uniform-sized roundish blackish spots on the body. The spots are larger, darker, and closer together on the thighs and upper parts of the legs. The tail has some black rings near the end, and a small black tip.

*Hab.* Northern India (*Capt. Boys*).

This does not appear to be a common Cat in India, as we have only received a single half-grown example, which was purchased at the sale of Capt. Boys's specimens; and I do not find it described in any systematic work, nor do I recollect to have seen any specimens of it in continental collections.

In his crude paper on the Asiatic species of the genus *Felis* (P. Z. S. 1863, p. 185), Mr. Blyth places *Felis ornata* under *Felis torquata*, observing that the figure is "very bad." If he had compared the specimen in the British Museum with the figure, he must have reversed this note; for it is very characteristic, but is taken from a larger and brighter specimen. Mr. Blyth, when he saw the specimen in the Museum collection, in his usual offhand manner, said it is only one of the numerous varieties of the common Indian Cat. This species is quite distinct from the Cat that Sir William Jardine afterwards figured as *Felis ornata* in the 'Naturalist's Library,' *Felidæ*, t. 28.

9. Notice of a New Species of American Tapir, with Observations on the Skulls of *Tapirus*, *Rhinocærus*, and *Elasmognathus* in the Collection of the British Museum.  
By Dr. J. E. GRAY, F.R.S., V.P.Z.S., F.L.S.

(Plate XLII.)

The British Museum having recently received the skulls of some specimens of American Tapirs in different states of development, I have been induced to reexamine the series of skulls in the collection, and herewith send the notes which I have made during the process.

Mr. Sclater has kindly presented to the Museum the skull of an

adult Baird's Tapir from Central America, which had been sent to him by Capt. Dow\*; and more lately Mr. Salvin has obtained for the Museum the skin and the skull of a half-grown specimen of the same animal. Thus we have the skull of this interesting genus in two very distinct states of development. Mr. Sclater has also kindly shown me a photograph of the very young animal, in its spotted and banded state, which is on its way to the Gardens of the Society. These materials have enabled me to study this very interesting animal in considerable detail. To understand its characters more completely I have compared the skull with the series of skulls of Tapirs in the British Museum and in the Museum of the College of Surgeons, and with the figures of the skulls to be found in Cuvier's 'Ossemens Fossiles' and De Blainville's 'Ostéographie.'

These examinations have enabled me to point out the craniological characters by which the species may be distinguished, and also to record the differences which occur in the skulls of the different kinds as the animal passes from youth to adult age.

These researches have induced me to believe that one of the skulls of Tapirs in the British Museum indicates the existence of a South-American species that has not yet been observed in the living state.

This is not extraordinary when we recollect that the Tapir of Central America, which belongs to a peculiar group, was not distinguished from the common Tapir until the very peculiar formation of its skull was observed and figured.

#### FAM. TAPIRIDÆ.

Nose produced into a short proboscis. Toes two or three, subequal, all reaching the ground, without any prehensile process on the upper edge, nail short; each with a separate hoof. Face not horned. Neck short. Cutting-teeth in each jaw, erect, normal.

*Tapirina*, Gray, List Mamm. B. M. p. 184.

*Multungula genuina*, Giebel, Säugeth. p. 177.

*Onguligrades*, Blainville.

There is a peculiarity in the change of the teeth of the Tapirs which I do not find noticed in Owen's 'Odontographia,' or in De Blainville's 'Ostéographie,' or in any work that has occurred to me. In most mammalia the second series of the cutting-teeth are developed rather within the base of the milk series; but in the Tapirs they are developed so far within their hinder edge that, when the milk series are about to be shed and the permanent series are just about being developed, there are two distinct series of apertures to be observed in the intermaxillaries and the front edge of the lower jaw.

The skulls of the American Tapir and of Baird's *Elasmognathus* in the British Museum show this peculiarity.

The skull of a young American Tapir in the Museum Collection shows the same peculiarity. In this specimen, which has lost all its

\* See Mr. Sclater's remarks on exhibiting this skull, *antea*, p. 473.

milk-teeth, the development of the alveoles is not so uniform, the cavities left by the milk-teeth being much larger and more or less broken away on the outer edge; while the inner series of pits, from which the permanent teeth are to be developed, are much smaller, shallower, and far apart; perhaps they would have been larger and more developed if the animal had been allowed to live until the permanent teeth were more developed.

The space between the two series is much larger in the skull of the *Elasmognathus bairdi*. The skull of the younger specimen of *E. bairdi* in the British Museum has lost all its milk cutting-teeth in each of the jaws, each leaving a well-marked, regular, circular, conical cavity on the edge of the jaw. Just within these cavities, but well separated from them by a bony plate, and alternating with the cavities of the milk-teeth, is placed a regular series of six well-developed similar, but not quite so large, circular, conical cavities. At the base of each cavity is to be observed the commencement of a tooth, being the teeth of the permanent series. The front of the lower jaw exhibits the same peculiarity; but the cutting-teeth of the lower jaw are more unequal in size, the cavities of the central series being the largest, and gradually diminishing in size to the outer one. In the skulls of the young American Tapir and of the *E. bairdi* there is a second cavity on the inner side of the base of the milk-canine. In the skull of *T. americanus* one of the milk-canines is remaining; it is of a very small size, and compressed lancet-shaped in form. In the *E. bairdi* the milk-canines are shed.

In the skull of the young *Tapirus americanus* in the British Museum, which has shed its cutting-teeth, there is an abnormal tooth (probably a false grinder) to be observed on each side of the maxilla, rather in front of the middle of the space between the base of the canine and the front edge of the first grinder. They are each placed on the outer side of the jawbone, near the lower edge, and are covered with well-developed enamel, and are similar in form and size. Are these teeth similar to the front or false grinders in *Anoplotherium*?

The family may be divided into two groups or tribes:—

#### Tribe I. TAPIRINA.

*The nasal aperture elongate, gradually contracted into a narrow opening in front, extending nearly to the root of the upper canines. The upper jaws only united in front as far as the root of the canines; the upper part on the sides of the nasal aperture broad, rounded. The internasal cartilage only ossified at the hinder part under the nasal bone.*

M. Cuvier, in the 'Ossemens Fossiles,' vol. ii. p. 145, gives the osteology of the American Tapir (*T. americanus*) with considerable detail, and devotes a chapter to the comparison of the bones of the Indian Tapir (*T. indicus*) with those of the American Tapir (p. 156); he figures the skeleton and skull of the two species and some of the other bones. The figures of the separate skull and of the skeleton

of the American species are very incorrectly drawn; they are very unlike, and both give a very false idea of the form of the nose. It is to be observed they are some of Cuvier's earliest works, drawn and etched by Cuvier himself, and certainly not to be compared with those drawn and engraved by his humble but talented colleague M. Laurillard.

Blainville, in his 'Ostéographie,' "Mammifères Onguligrades," figures:—the skeleton of *Tapirus indicus* (t. 1), and the details of the skull (t. 2), details of the members (t. 4), and of the dentition (t. 5); the skull of *Tapirus americanus* (t. 3), details of the members (t. 4), and of the dentition (t. 5); the skull of *Tapirus pinchacus* (t. 3), and details of the dentition (t. 5).

### 1. TAPIRUS.

The internasal cartilage ossified just at the hinder part under the base of the nasal; foramen maximum nearly circular. Occipital crest narrow, high. Forehead small, narrow. Canines in the maxilla just behind the intermaxillary suture. The hinder upper edges of the intermaxillaries produced behind, and forming part of the upper margin of the nasal aperture.

Teeth 42:—In.  $\frac{3-3}{3-3}$ . C.  $\frac{1-1}{1-1}$ . Pm.  $\frac{4-4}{3-3}$ . M.  $\frac{3-3}{3-3}$ . Milk-molars  $\frac{4-4}{3-3}$ .

*Hab.* South or Tropical America.

*Tapirus*, Cuv. Oss. Foss. iv. p. 293; Owen, Odont. p. 604, t. 96. f. 4, 5.

*Rhinocærus*, part., Wagner, Syst. Amph. p. 19.

These animals are generally brown, with white edges to the ears. The hinder part of the back above the tail is generally more or less destitute of hair.

### 1. TAPIRUS TERRESTRIS.

Fur short, dark brown, rather paler beneath. Skull with a high regularly arched crest over the brain-case; nasal bones over the back of the orbits elongate, triangular, acute; the front edge of the cavity of the internal nostrils in a line with the hinder edge of the sixth grinder in the adult series, or with the back edge of the last well-developed grinder in the imperfect series of grinders; the front part of the nasal apertures contracted, and gradually tapering in width towards the front end; face rather elongated; the space between the grinders and canines rather longer than the length of the outer edge of the two true grinders; the occipital end of the skull triangular, arched above, higher than broad; lower jaw with an arched lower edge.

Var. 1. The front edge of the cavity of the internal nostrils in a line with the middle of the inner edge of the penultimate or sixth grinder in the complete series.

Var. 2. The space between the grinders and the canines larger.

In other respects both these skulls are exactly like the normal skull of *T. terrestris*.

Var. 3. With a small additional premolar close in front of the base of the usual first premolar on the right side of the lower jaw.

*Hippopotamus terrestris*, Linn. S. N. p. 174.

*Tapirus americanus*, Schreb. Säugeth. t. 319; Cuvier, Oss. Foss. iii. p. 277, t. 66-68; Blainv. Ostéog. Ongulig. t. 1, 5; P. Z. S. 1850, p. 102; 1851, p. 121; 1859, p. 51; 1860, pp. 181, 261.

*T. anta*, Zimm.

*T. terrestris*, Gray, List Mamm. B. M. p. 184; Gerrard, Catal. Bones, B. M. p. 275.

*T. suillus*, A. Wagner, Schreb. Säugeth. iv. p. 777, t. 319; P. Z. S. 1860, p. 261.

*Tapirete*, Marcg. Bras. p. 229, fig.

*Tapirou l'anta*, Buff. H. N. xi. p. 444, t. 43.

Junior. *Cabani éléphantipède*, Geoff. Mus. Paris; Desm. N. Dict. H. N. p. 503.

The British Museum possesses six skulls of this species. Four skulls are of full-grown or nearly full-grown animals; one is young, with only four grinders; and another is young, with only the milk-teeth.

These skulls show that this species is found in Brazil (where it was obtained by Mr. Miers), and also in Berbice and Demerara. The specimen from the latter country was obtained by Sir Robert Schomburgk.

The skull of the younger animal, which has only the four or five grinders developed (even when the other grinders are being developed), has the front edge of the hinder nasal aperture in a line with the hinder edge of the last well-developed grinder—that is to say, the fourth or fifth, as that tooth may happen to be the last well-developed one. A skull in this state is figured by Cuvier, Oss. Foss. ii. t. 2. f. 2; but the last or fifth grinder, canines, and cutting-teeth are represented more developed than they ought to be to agree with our specimens. This position of the aperture has been verified in a series of five skulls of animals with the teeth in five different states of development. The aperture is figured in its proper position in the adult skull.

In the skull of the nearly adult animal, in which the last or seventh grinder is not completely formed, but of a moderate size and nearly ready to pass through the gums, the front edge of the internal nasal aperture is in a line with the back edge of the sixth or penultimate grinder, as in the skulls of the adult animals which have cut the last or seventh grinder. The internal nasal aperture probably slightly changes its place when the animal increases in age, or is sometimes liable to variation.

In the skull of an adult (perhaps rather aged) animal, which has all the seven grinders well developed, in the British Museum, and which agrees with the adult skull of the common Brazilian Tapir, the front edge of the hinder nasal aperture is rather more forward than in the other adult skull; that is to say, the front edge is in a line with the middle of the sixth or penultimate middle grinder. The



skull figured by M. de Blainville in his 'Ostéographie,' t. 3, as that of *Tapirus americanus* agrees much better with this skull than with any of our skulls of *T. americanus*, as, in this skull, the face is more elongated and slender. The upper line of the central crest of the skull is regularly arched, and not arched in front and with a nearly straight line on the hinder part of the crown. It differs from the skull of *T. laurillardi* in the nasal bones being long, tapering, and acute, as in the skull of the normal *T. americanus*.

The length of the space between the hinder edge of the canine and the front edge of the first grinder in the figure agrees with that found in the *T. americanus*; that is to say, it is only rather longer than the length of the first two grinders.

There is a skull of an American Tapir in the Museum of the College of Surgeons which is rather more elongate than the rest of the skulls; and in this respect it bears some resemblance to the skull of *Tapirus laurillardi*.

## 2. TAPIRUS LAURILLARDI. (Fig. A.)

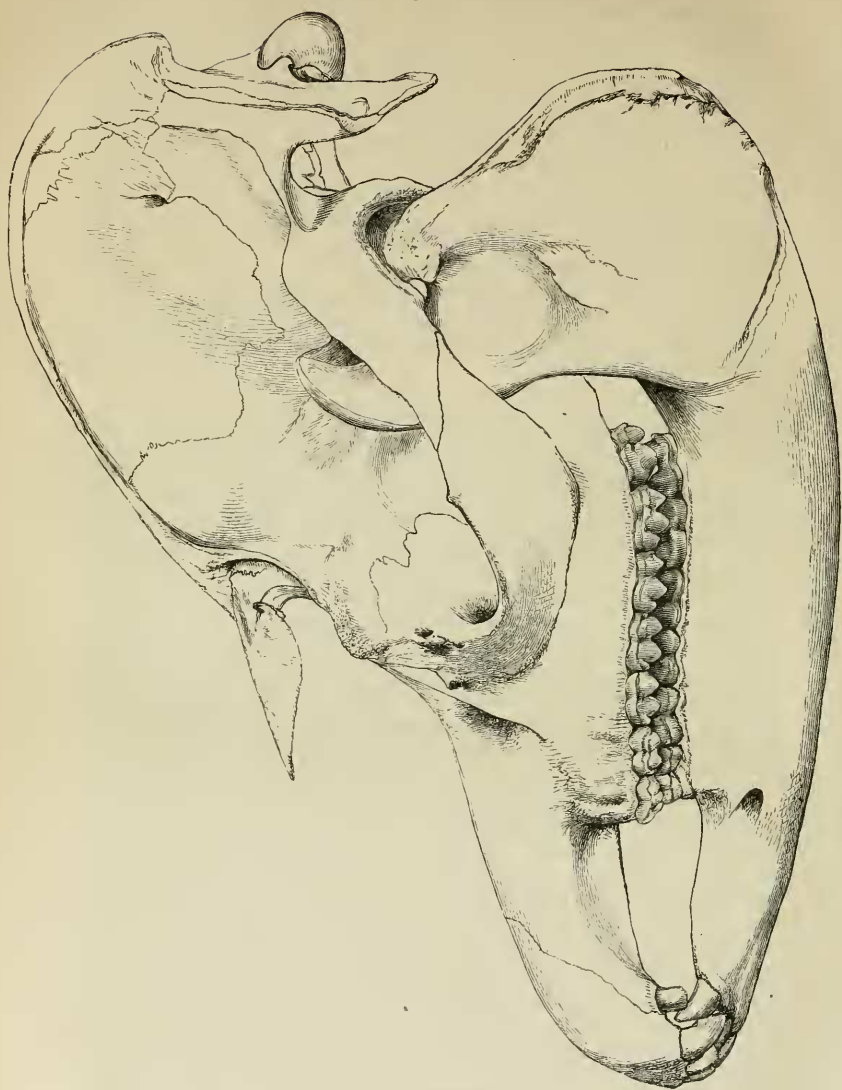
Skull with a high, regularly-arched crest over the brain-case; the nasal bones over the back of the orbit very short, broad, broader than long, and with rounded ends; the front edge of the cavity of the internal nostrils in a line with the middle of the last or seventh grinder in the complete series; the face rather elongate, the space between the canines and the grinders as long as the length of the outer side of the first three grinders; the front part of the nasal aperture suddenly contracted, and then continued as a narrow linear groove to the front of the nose; the occipital end of the skull triangular, arched, higher than broad; the lower edge of the lower jaw slightly arched, the front part rather produced and contracted; the grinders are rather small, the complete series being about  $\frac{1}{4}$  inch shorter than in the former species, being  $5\frac{1}{4}$  inches in *T. laurillardii*, and  $5\frac{1}{2}$  in *T. terrestris*.

The skull here described was purchased of Mr. Brandt of Hamburg in 1852 as that of "*Tapirus americanus* from South America," without any more special habitat. I know that Mr. Brandt had a collector in Venezuela; so it may be he who "shot and skinned himself"—that is, the animals from that country; and Dr. Seemann says he has seen many Tapirs in that province.

I have named this species after M. Laurillard, the Assistant in the Museum of Comparative Anatomy of Paris, who made most of the drawings of M. Cuvier's 'Ossements Fossiles.' He was a most kind, attentive, modest man, who was always willing to give assistance to all students, and devoted much time to assist others in their labours; it is to his industry and accuracy that great part of the value of the 'Ossements Fossiles' is to be attributed. I am personally indebted to him for great kindness and an unceasing desire to facilitate any researches that I might have in hand. He was one of those men who seem satisfied—so that the work of science progressed, any one might claim the reputation of doing it; and few men have done more for osteology and palæontology than M. Laurillard.



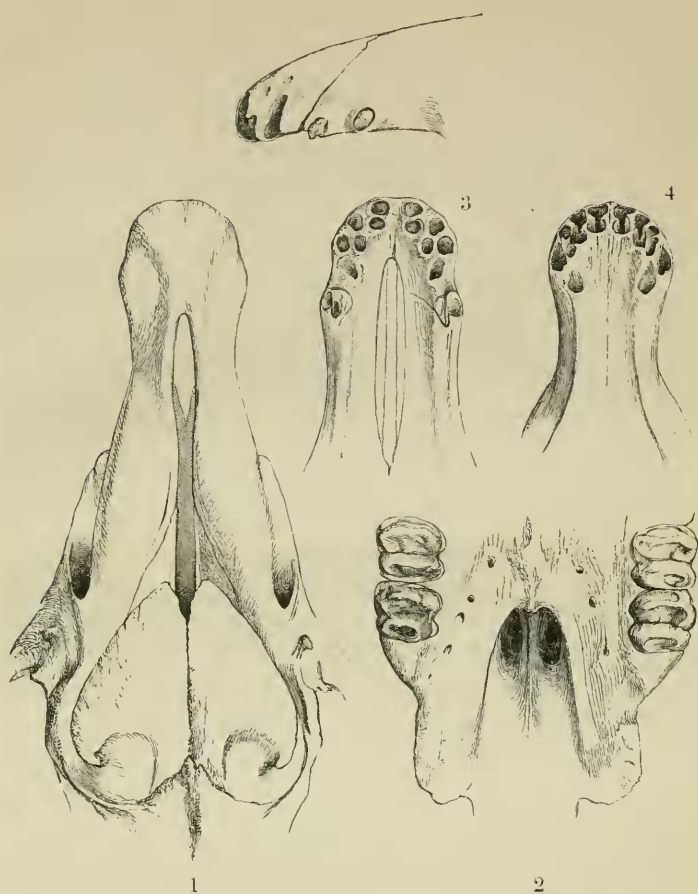
Fig. A.

Skull of *Tapirus laurillardii*.

This skull, in the length of the front of the face and in the comparative straightness of the lower edge of the under jaw, agrees in some respects with the skull figured by De Blainville under the name of *Tapirus pinchacus* (t. 3). It differs from the figure of that skull

Fig. B.

5



1. The nasal bones and upper part of the skull of *T. laurillardii*.
2. Internal nasal opening of *T. laurillardii*.
3. End of the upper jaw of *T. laurillardii*.
4. End of lower jaw of *T. laurillardii*.
5. Front of the upper jaw of *Tapirus terrestris*, showing the rudimentary premolar.

in the shortness and breadth of the nasal bones, and also in the front of the upper jaw not being so much produced, and in the lower edge of the lower jaw not so straight, and in the narrow linear form of the grooves between the maxillæ forming the internasal cartilages. The position of the internal nostril on the palate at once separates it from the other American Tapirs.

3. *TAPIRUS PINCHACUS*.

“Neck round, without fleshy crest. Body covered with very close blackish-brown hair, which is darker at the tips. Chin with a white spot, which is elongated behind, and bent up to the middle of the lip.”

*Tapirus pinchaque*, Roulin, Ann. Sci. Nat. xvii. 1829, p. 107; Wagner, Schreb. Säugeth. vi. p. 392; Goudot, Compt. Rend. A. S. Paris, xvi. 1843, p. 331.

*T. pinchacus*, Blainv. Ostéog. Ongulig. t. 1-5.

*T. roulini*, Fischer, Syn. Mamm. p. 606; Giebel, Säugth. p. 182.

*T. villosus*, Fischer.

*Hab.* Cordilleras.

Shull, as figured by De Blainville, depressed behind, the crest being nearly straight over the brain-case; the nasal bone is elongate, acute over the hinder part of the orbit; the front edge of the cavity of the internal nostril is in a line with the back edge of the sixth or penultimate grinder in the complete series; the space between the canines and grinders is rather longer than the length of the outer side of the first two grinders; the occipital end of the skull low, broader than high; the lower jaw is nearly straight beneath.

I have never seen this species, and only know it from M. Roulin's description and the figures of the two skulls in De Blainville's 'Ostéographie.'

2. *RHINOCÆRUS*.

The internasal cartilages ossified at the hinder part; the bony plate extending above nearly the whole length of the nasal, not so far below; foramen maximum subquadrangular, large. Occipital crest very broad, flat-topped. Forehead and crown broad. Lower jaw straight beneath.

*Hab.* Asia.

*Rhinochærus*, part., Wagner.

1. *RHINOCÆRUS SUMATRANUS*. The Kuda, Ayer. B.M.

Fur very short, black; back and sides white.

*Tapirus indicus*, Desm. Mam. p. 411; F. Cuv. Oss. Foss. iii. p. 297, t. 69, 70; Giebel, Säugeth. p. 183; Blainv. Ostéogr. Ongulig. t. 1-5.

*T. sumatranus*, Gray, Med. Repos. p. 1821.

*T. malayanus*, Raffles, Linn. Trans. xiv. p. 270; Griffith, A. K. iii. t.; Horsf. Zool. Journ., Zool. Java, t.; Gerrard, Cat. Bones, B. M. p. 276.

*T. bicolor*, A. Wagner, Schreb. Säugeth. vi. p. 400.

Cuvier (Oss. Foss.) states that the Malay Tapir was discovered in India by M. Duvaucel. It does not inhabit India; and M. Duvaucel only knew the animal from the drawing of it that was in General Hardwicke's collection, from a specimen obtained by Major Farquhar in Malacca, and from a skull which he obtained from the same source.

The upper hinder edge of the intermaxilla triangular, narrow, produced, with a part of the maxilla on the inner side separating it from the margin of the internasal aperture. The front edge of the cavities of the internal nostrils in a line with the hinder edge of the sixth tooth when all the seven grinders are developed, and in a line with the back edge of the fifth grinder when the sixth grinder is being developed, and also when it is completed and the seventh grinder is being developed. This last or seventh grinder is developed very late in life; indeed I have not seen any skulls, either in the British Museum or in the College of Surgeons, where it is developed. There are three in each of these collections.

De Blainville (*Ostéographie*, *Tapirus*, pl. 2) figures the skull of an adult animal with all the seven grinders developed; and he represents the front edge of the hinder nasal opening as in a line with the hinder edge of the *sixth* or penultimate grinder, as in the skull of *Tapirus americanus*.

The skull of the skeleton figured in plate 1 of the same work, like the skull in the British Museum, has only six grinders in the upper (and five in the lower).

## 2. RHINOCÆRUS ME.

*Me des chinois*, Remusat, *Ann. Sci. Nat.* xviii. p. 5, t. 1.

*Hab.* China.

## Tribe II. ELASMOGNATHINÆ.

*The nasal aperture short, broad, subcordate, and truncated in front by the bony ridges of the maxilla. The upper jaw with a high sharp-edged crest on the upper inner edge, embracing the sides of the very large internasal cartilages, which early become entirely ossified into a bony plate, permanently dividing the nasal cavity, and forming a high bony crest on the front of the skull.*

### ELASMOGNATHUS.

The internasal cartilages ossified nearly the whole length, the bony part produced beyond the end of the nasal.

*Elasmognathus*, Gill.

#### ELASMOGNATHUS BAIRDII. (Pl. XLII.)

Fur very short, close, dark black brown; lower part of the cheeks and sides of the neck bay brown; chin, throat, chest, and front edge of the shoulders greyish white.

*Young, born with pale stripes*, Verrill, *Silliman's Amer. Journ. Sci.* July 1867; *Ann. & Mag. N. II.* 1867, xx. p. 232.

*Elasmognathus bairdii*, Gill (?), *vide* Verrill.

*Hab.* Panama; skull, *Mus. Coll. Surgeons*; *Brit. Mus.*, adult and young skull.

The internasal septum is continued between the elevated sharp upper edges of the maxillæ, and even between the upper edges of the

intermaxilla. It remains cartilaginous until it reaches its adult size, and then becomes ossified, forming a thick bony erect plate.

In the younger skull the cartilaginous septum is produced nearly to the root of the cutting-teeth; but in the older skull, where the septum has become ossified, the front parts of the intermaxilla are produced, and the septum ends over the root of the canines. The shortness of the nasal cavity and the sharp-edged crest of the maxillæ distinguishes the skull from those of the Tapirs in all ages.

The sides of the face of the skull are flattened; the zygomatic arch and the front of the orbit over the preorbital foramen is expanded, flattened, and compressing the foramen into an oblong erect shape; the upper edge of the orbit is narrow and flat, not produced into lobes as in the American Tapir; the nasal bones are narrow, longer than broad at the base, with an oblong deep concavity on each side of their base, which is continued upwards behind it, so as to be only separated by a small central ridge; the hinder palatine nasal opening varies in size in the two sexes, or it becomes much wider and broader in front as the animal increases in age. In the skull with the cartilaginous internasal septum, and only four grinders in each side, the concavity containing the internal nostrils is narrow and oblong. In the older skull with the septum entirely bony, and with seven grinders in each side, the concavity containing the internal nostrils is much broader, being nearly as wide as long, and the vault is more evenly rounded.

The young animal, like the young of the Brazilian and other Tapirs, is spotted and striped with white. Mr. Sclater has kindly lent me a photograph of a young Panama Tapir, which is on its way to the Society's Gardens; and a copy of the photograph has been added to Mr. Wolf's figure (Pl. XLII.) of the half-grown animal, which Mr. Salvin has obtained for the British Museum.

The young animal is described by Mr. Verrill as above quoted; and the description is printed in the 'Annals and Magazine of Natural History' for 1867, xx. p. 232.

The animal is similar to the Brazilian Tapir externally; indeed all the naturalists and zoologists who have observed it at Costa Rica regarded it as the same as that species until the skull was examined; and it is said that one was exhibited alive in the Jardin d'Acclimatation at Paris for some time as a Brazilian Tapir; but it is easily distinguishable by the bay cheek and white chest.

## 10. On New Species of Birds from South Africa.

By REV. H. B. TRISTRAM, M.A., F.L.S., C.M.Z.S.

Among a collection of birds recently sent to me from the Cape Colony by Mr. E. L. Layard I find two specimens of a Swift labelled by Mr. Layard *Cypselus melba*.

These birds are clearly distinct from *C. melba*. In size and form there is no difference, excepting that the wing of the South-African

bird is a trifle smaller than that of most of my European and Asiatic specimens; but the coloration is very distinct. The whole of the upper plumage is a uniform brown black, very much darker than that of *C. melba*; the white of the throat is much less in extent, and gently blends into the brown of the pectoral collar. In *C. melba* the pectoral collar is a narrow gorget of about  $\frac{1}{2}$  inch in diameter. In the South-African species it extends for a breadth of about 2 inches, leaving only the abdomen white; while the flanks, white in the northern species, are brown in this.

It may seem strange that so well-marked a species should have hitherto nearly escaped observation; but a Swift is a bird more often seen than obtained, and the only author I have been able to ascertain as speaking of the present species from personal examination is Levaillant. Mr. Gurney has not received this bird from Natal; and I am unable to discover a South-African specimen in any museum, except the British Museum, to which I have had access.

I should have dedicated it to Mr. Layard, to whom ornithologists are deeply indebted for his persevering and almost unaided researches in the fauna of South Africa, but for Vieillot's name of *C. gutturalis* having been specially applied to Levaillant's figure.

CYPSELUS GUTTURALIS, Vieill.

*Magnitudine C. melbae, sed supra aeneo-niger, nec fuscus: gutture medio albo, lateraliter grisescente: pectore toto et lateribus metallicè grisescentibus: abdomine medio tantum albo.*

Mus. H. B. Tristram.

I have also received from Mr. Layard several specimens of a Swift, labelled *C. apus*, but which differ from our Common Swift, exactly as described by Dr. Sclater in P. Z. S. 1865, p. 599, in their lighter colour above, particularly on the secondaries and scapulars, in the white feathers of the gular patch (which is much smaller, presenting a narrow black central line), and in the feathers of the lower back, belly, and under wing-coverts being narrowly margined with white. Mr. Gurney's specimens from Natal have the same characteristics.

As all the specimens known from South Africa agree in these peculiarities, I venture to submit that Temminck's MS. name in the Leyden Museum should be recognized, and that the South-African representative of *Cypselus apus* should be acknowledged as *Cypselus barbatus*, as has been already suggested by Dr. Sclater.

Specimens in the same collection have also enabled me to recognize a new species of the Saxicoline genus obtained by Dr. Kirk on the Zambesi. Dr. Kirk, in his paper on the "Birds of the Zambesi Region" (Ibis, 1864, p. 318), mentions "*Campicola pileata*, among the rocks of the Murchison Rapids, common; in other situations not observed." This is the only Chat obtained in those regions. I possess one of Dr. Kirk's type specimens, and, on comparing it with skins from the Cape of Good Hope, find it clearly a distinct species, though representative of *Campicola pileata* (Gm.). The dimensions are smaller in every way; the white on the forehead is



much more contracted; the black does not descend so low on the occiput; the back is rather darker in hue; while, instead of a broad pectoral band of deep black extending from the white throat to the abdomen, there is merely a narrow black gorget between the throat and the breast. I propose therefore to describe the species as

*CAMPICOLA LIVINGSTONII*, n. sp.

*Campicolæ pileato similis, sed minor: fronte vix albo notata: capitis colore nigro non in occiput descendente: tergo cinnamomeo-fusco: gula alba, zona nigra contracta a pectore divisa, neque scuto lato nigro, ut in C. pileato: pectore albo, in rufo-cinnamomeum descendente: abdomine, lateribus, caudaque sic ut in C. pileata.*

Long. tota 6 pull., alæ 3·7, caudæ 2·5, rostri a rictu 0·7, tarsi 1·15.

*Hab.* Murchison Falls, Zambesi River.

*Mus.* H. B. Tristram.

11. Descriptions of Six New Species of *Helicidæ*, from the Solomon Islands, Western Pacific. By GEORGE FRENCH ANGAS, F.L.S., C.M.Z.S.

(Plate XLIII.)

1. *GEOTROCHUS GAMELIA*. (Pl. XLIII. figs. 1, 2, 3.)

Shell imperforate, flatly conical, thin, obliquely, faintly, and irregularly plicately striated, white, rather broadly banded with dark brown at the suture and periphery, the lower edge of the sutural band sometimes diffused and paler, and with a spiral band of the same colour at the base; spire conical, rather obtuse at the apex; whorls five, nearly flat, the last more or less descending, subangulate at the periphery, convex at the base; columella sloping, moderately wide; aperture diagonal, truncately oval; peristome thin, the margins distant, the right flexuous and slightly expanded, the basal slightly reflexed.

*Variety.* With the basal band very broad, columella and lip brown, and an additional narrow band on the three lower whorls.

Diam. maj. 12, min. 10, alt. 10 lin.

*Hab.* St. Stephen Island and Ysabel Island, Solomon group.

2. *GEOTROCHUS EROS*. (Pl. XLIII. figs. 4, 5, 6.)

Shell umbilicated, subtrochiform, rather solid, obliquely striated, on the last whorl decussated with very fine sloping rugose striæ, pale fawn-colour, banded with white at the periphery, and ornamented with two rows of irregular chestnut blotches; spire conoidal, apex rather obtuse and rose-coloured; whorls four and a half, slightly convex, the last a little descending, keeled at the periphery, convex

at the base, which is also ornamented with two partially interrupted spiral chestnut bands; aperture oblique, rhomboidally ovate; peristome rose-coloured, the margins distant, the right slightly flexuous and expanded, the basal reflexed, arcuated and obsoletely toothed within.

Diam. maj. 9, min.  $7\frac{1}{2}$ , alt.  $6\frac{1}{2}$  lin.

*Hab.* St. Stephen Island and Ysabel Island, Solomon group.

### 3. *GEOTROCHUS AMBROSIA*. (Pl. XLIII. figs. 9, 10.)

Shell imperforate, globosely conical, moderately thin, very finely obliquely striated, whitish, ornamented with two purplish brown bands, the lower one broader, and frequently mottled with irregular opaque bluish-white oblique blotches; spire convexly conical, apex rather obtuse; whorls five, convex, the last descending, convex at the base, which at the front part is purplish brown, from which a third band of the same colour extends a little below the periphery; columella sloping, rather wide, nearly straight, flattened; aperture diagonal, truncately oval; peristome white, the margins distant, the right slightly expanded and flexuous, the basal reflexed.

Diam. maj. 10, min.  $8\frac{1}{2}$ , alt. 10 lin.

*Hab.* Galera, or Russell Island, Solomon group.

### 4. *GEOTROCHUS COXIANUS*. (Pl. XLIII. figs. 7, 8.)

Shell imperforate, trochiform, rather thin, obliquely finely striated, polished, creamy white, the lower whorls ornamented with irregular chocolate-brown spots; spire conical, apex rather obtuse; whorls six, flatly convex, the last scarcely descending, obtusely angled at the periphery, convex at the base, the umbilical region pale purplish brown, with the central portion chocolate-brown; columella sloping, flattened, chocolate-brown; aperture very oblique, ovate; peristome chocolate-brown, the margins approximate, slightly thickened and expanded, the right flexuous above.

Diam. maj. 11, min.  $9\frac{1}{2}$ , alt. 11 lin.

*Hab.* Ysabel Island, Solomon group.

I have named this beautiful species in honour of Dr. Cox of Sydney, whose indefatigable exertions in the cause of science have made us acquainted with many new Australian and Polynesian shells.

### 5. *GEOTROCHUS MENDANA*. (Pl. XLIII. figs. 11, 12.)

Shell perforate, conical, solid, obliquely finely striated, pale brown, ornamented with a whitish sutural band and two chestnut bands, the upper contiguous to that at the suture; spire conical, apex acute; whorls seven, slightly convex, the last not descending, obscurely angled at the periphery, convex at the base, which is broadly banded with reddish brown; aperture diagonal, truncately oval; peristome white, widely expanded and reflexed, the columellar margin triangularly dilated and reflexed, almost covering the perforation.

Diam. maj. 11, min. 9, alt. 13 lin.

*Hab.* Ysabel Island, Solomon group.

6. *TROCHOMORPHA PARTUNDA*. (Pl. XLIII. figs. 13, 14, 15.)

Shell widely and deeply umbilicated, somewhat conically lenticular, rather solid, obliquely striated, pale horn-colour, broadly banded with dark chestnut; spire convexly depressly conical, apex obtuse, suture narrowly margined; whorls five, rather convex, the last a little descending, acutely keeled, slightly convex at the base, which is sometimes brown, the colour extending to within a short distance of the keel, at other times broadly spirally banded with brown; umbilicus conical, nearly one-fifth the diameter of the shell; aperture diagonal, truncately oval; peristome nearly straight, the margins converging, the right slightly flexuous, the basal a little thickened.

Diam. maj.  $6\frac{1}{2}$ , min. 6, alt. 4 lin.

*Hab.* Galera, or Russell Island, Solomon group.

## DESCRIPTION OF PLATE XLIII.

- Figs. 1, 2, 3. *Geotrochus gamelia*, p. 888.  
 4, 5, 6. — *eros*, p. 888.  
 7, 8. — *coxiatus*, p. 889.  
 9, 10. — *ambrosia*, p. 889.  
 11, 12. — *mendana*, p. 889.  
 13, 14, 15. *Trochomorpha partunda*, p. 890.  
 16, 17. *Cœliaxis exigua*, p. 907.

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November 28, 1867.

John Gould, Esq., F.R.S., V.P., in the Chair.

Mr. P. L. Sclater read notes upon some recent remarkable additions to the Society's Menagerie, namely:—

(1) A specimen of the Black-headed Partridge (*Caccabis melanocephala*)\* from Abyssinia, purchased October 30th; not previously exhibited in the Society's Avaries.

(2) Two Red-billed Hornbills (*Toccus erythrorhynchus*), purchased October 30th. This addition increased the Society's series of *Bucerotidæ* to eleven in number, representing the following six species:—

*Buceros bicornis*, Linn., ex. Ind.

— *rhinoceros*, Linn., ex Malacca.

— *elatus*, Temm., ex Afr. occ.

— *atratus*, Temm., ex Afr. occ.

\* *Perdix melanocephala*, Rüpp. Wirb. Abyss. i. p. 11, t. 5.